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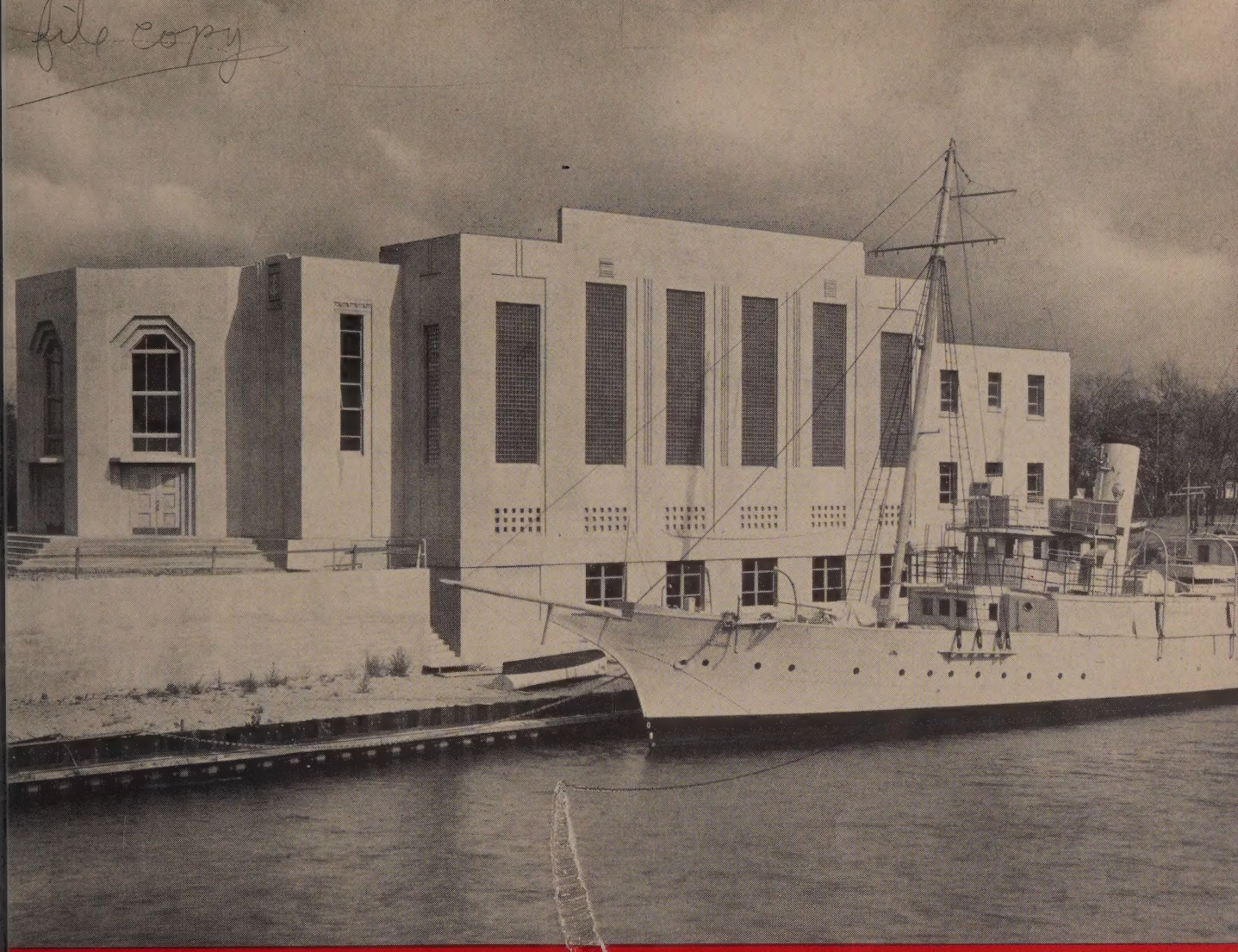


ARCHITECTURAL CONCRETE

VOLUME FIVE NUMBER ONE

INDIANA ARMORIES

Indianapolis, Michigan City
and Darlington

B. H. Bacon and
John P. Parrish, Architects

Built by WPA

Of the three Indiana armories completed in 1938, two of them—Michigan City (see cover) and Indianapolis—were erected for the Indiana naval forces, and the third at Darlington (photos above) is an infantry station. All of them are architectural concrete. The naval armories were designed by Architect B. H. Bacon, and the infantry armory was designed by Architect John P. Parrish. All construction was by Works Progress Administration.

Architectural
CONCRETE

The Indiana Armories

By B. H. Bacon and John P. Parrish, Architects

To many people an armory is just a place to go to see a wrestling match, prize fight, or a visiting soprano, but it has far more serious functions. It is a peace time training station for a war time army, a mobilization point for the National Guard in times of civil unrest, and a public shelter for victims of floods, hurricanes, and other local disasters. In many communities, particularly smaller towns and cities, the armory is the civic center. An armory can be the most used and most useful building in any community.

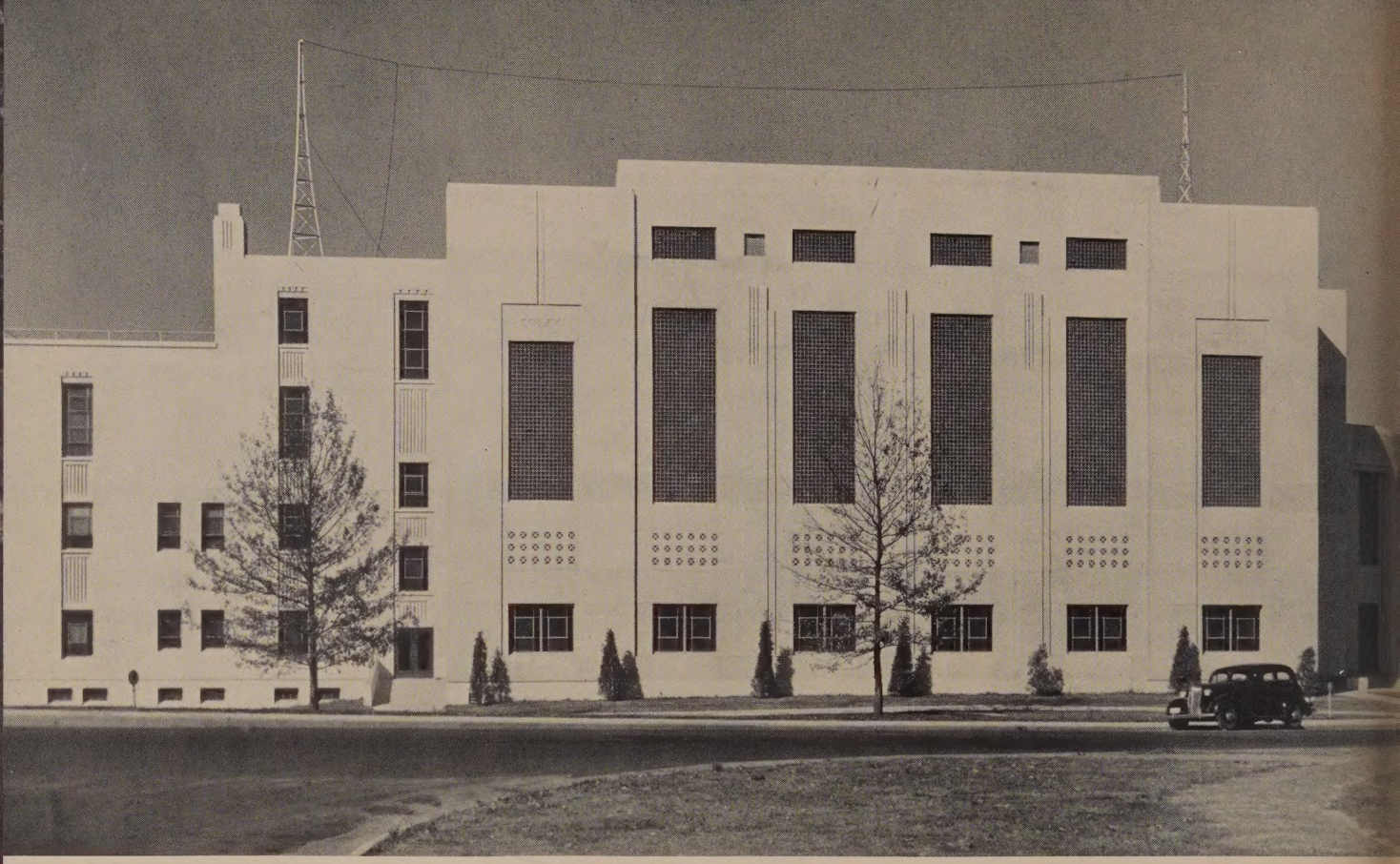
For this reason armory construction for many years has tended toward sturdy, permanent structures of architectural merit. And it is for this reason that the three new Indiana armories, erected during the past two years, are sturdy architectural concrete buildings, designed to reflect credit to the surrounding areas, and built to stand hard use for many a long year.

Two of the armories—one at Indianapolis and the other at Michigan City—were built for the Indiana naval forces, and the third is an infantry armory at Darlington. All of the buildings were erected by WPA labor recruited from local relief rolls. The fact that ample hand labor was available, while funds for materials were strictly limited, was one determining factor in the choice of reinforced concrete over any masonry material. Another reason was that the architects were convinced that with strict supervision, unskilled labor could be trained to produce good concrete work—and this belief has been realized in the results obtained. Considerations that weighed heavily in turning these projects toward concrete were, of course, assurances of low maintenance cost after completion of the buildings, firesafety, and strength to withstand hard use.

Entrance of Indianapolis armory.

When those in authority finally were convinced that architectural concrete was the proper material for these buildings, there was joy in the hearts of two architects who had built many foundations, floors, and columns of concrete, but never an entire building. And that is what they wanted to experience.

The Indianapolis armory, located on the White River at 30th Street, is the largest of the three and has the most elaborate molded detail, al-



Largest of the three armories is the Indianapolis naval station of which the main facade is shown above. Smooth-formed walls were relieved by grilles and flutes and by large vertical areas of glass block.

though all of the structures use ornamentation sparingly for the sake of economy as well as to express simple, modern, mass design. It is entirely reinforced concrete, except for the roof of the drill hall. Several types of floor systems were used, and the ceilings are exposed concrete.

Walls were formed against Presdwood to produce smooth surfaces. The finish texture, made by rubbing with carborundum stones, contrasts well with the large areas of glass block used on the main facades. Most of the molded detail is restricted to the large rotunda at the east end of the building which has well formed flutes and reveals and sharply incised lettering. The lettering, which also occurs at several places on the walls of the building, commemorates naval heroes. It was made by nailing wood strips to the Presdwood form liners.

Since the function of inland naval armories is to provide intense technical and mechanical training, a large part of the interior is devoted to classroom space. Where the armory fronts on the White River, there is a concrete dock and small boat rigging for crew practice. The Indianapolis armory is the home of the Fourth Battalion and a communications unit.

The Michigan City armory might be taken for a smaller edition of the Indianapolis building, for its general shape and use of detail are quite similar, though on a smaller scale. This armory, however, has a more nautical setting since it is located at the edge of a harbor slip running in from Lake Michigan, and is home port of the Indiana naval forces' training ship, the U.S.S. Hawk.

This building is entirely reinforced concrete, finished by applying a portland cement wash after the walls were cleaned down. The armory houses the 19th Detached Fleet Division.

Darlington Armory, located in a town of 500 population, is a typical one-unit infantry station with offices and club rooms occupying two floors of the administration portion. At the rear of this is a large drill hall. The basement is used for lockers, showers, garage and rifle range.

With the prospect of inexperienced labor and limited funds, simplicity became the keynote of the design. No attempt was made at ornamentation aside from fluted pilasters across the front and accentuated mullions above the entrance. The note of simplicity is further carried out by the contrast between the smooth surfaces of the base and upper part of the wall, and the board marks in the main body of the building.

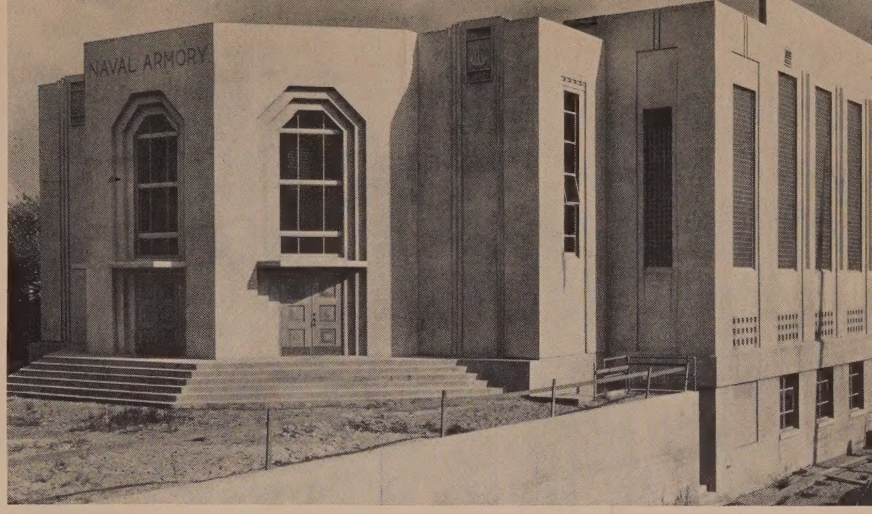
The only structural members of this building not of concrete are the roof trusses spanning the drill hall. Everything else is concrete, including the partitions, some of which are load-bearing and support floors or roof slabs. All forms were wood, using No. 1 common yellow pine T&G sheathing. Where smooth surfaces were desired, these forms were lined with Presdwood. In offices, club rooms and classrooms, all walls and ceilings were given a smooth finish.

Due to strict supervision of placing of the concrete there was less than a square yard of honeycombing in the entire job. After cleaning, the exterior was given two brush coats of white portland cement paint. The directions for using the paint were strictly followed. It was found that if the walls were wet down before the paint was applied, it could not be scraped off, but if this practice were not followed, the paint could easily be rubbed off.

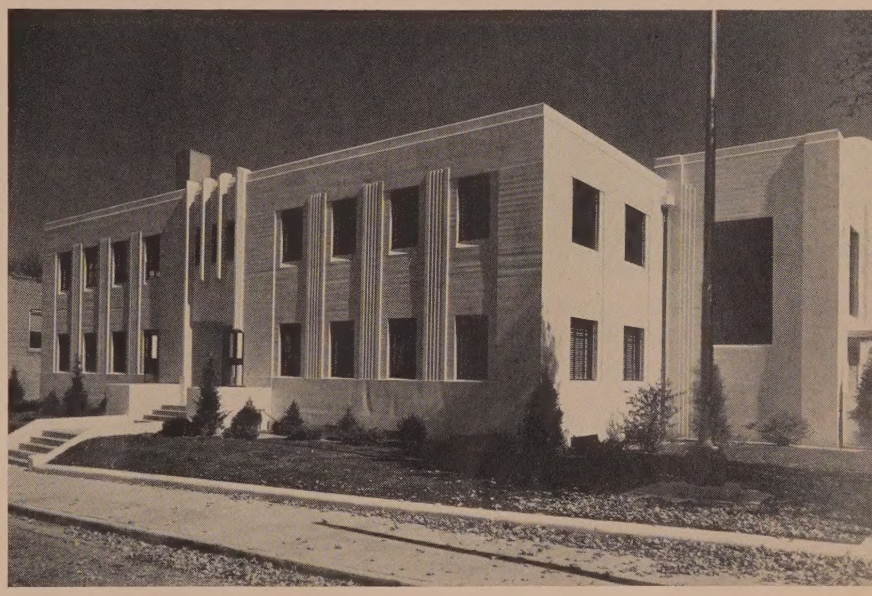
Although it was originally intended to leave the interior of Darlington Armory in the natural color of the concrete, the effect was too cold, and it was felt necessary to paint them in warm tones.

All three armory structures were ready for occupancy last summer, although work of finishing and installation was carried on until late in the fall. At the dedication of the Indianapolis armory last Navy Day, October 27, the architects were gratified by the high praise given the building in official and private comment. A Navy Department citation said: "Nowhere throughout the United States is there to be found an armory as well designed to insure maximum training, instruction, and general utilization efficiency."

As architects of these armories, we are more than gratified with the results obtained on our first work with concrete as a complete architectural material. Our anticipations were matched by accomplishment, and our belief that concrete could be placed beautifully and skilfully by ordinary labor was justified. To the construction superintendents who worked so loyally in following instructions and gave painstaking supervision, we want to express our mutual feeling of thanks and gratitude.

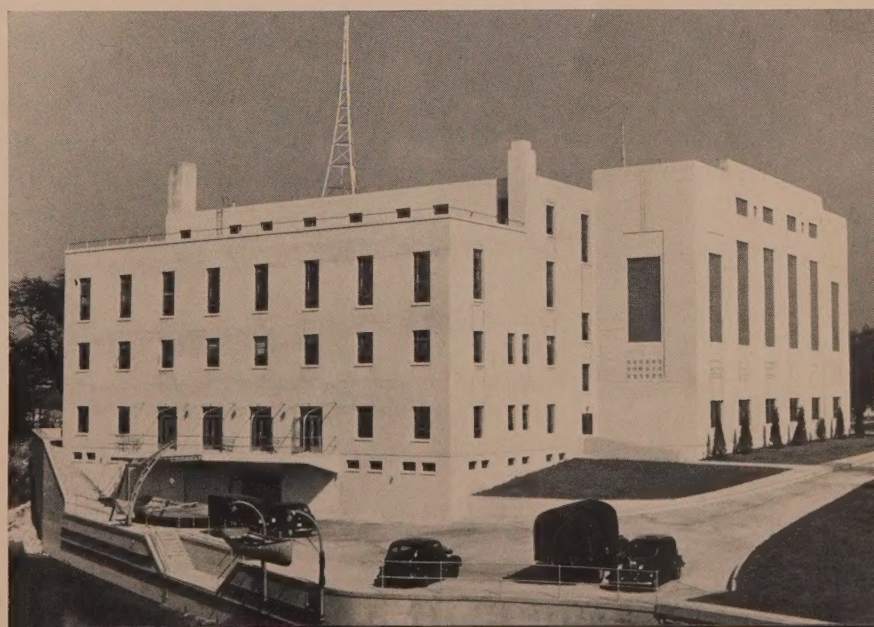


The finish of the Michigan City armory was a grey cement wash applied after the buildi had been cleaned down.



The wall texture of Darlington armory is the result of rough form boards. White portla cement paint was the finish treatment.

Where Indianapolis armory fronts on the river a concrete dock wall supports rigging for sm practice boats.



Memphis Municipal Airport keeps stride with modern air transportation progress. Newest facility is an architectural concrete administration building which serves three airlines. Walk C. Jones and Walk C. Jones, Jr., were the architects. The construction was by Works Progress Administration.

Airport Building — For Memphis

By Col. Harry S. Berry*

ONE of the finest and most beautiful airport buildings in the nation has been completed at Memphis Municipal Airport.

It was to render greater comfort, convenience and service to the thousands of airminded Memphis citizens and visitors that prompted construction last year of a new, modern airport administration building, the planning and construction of which is a part of the extensive airport expansion and modernization program now being carried out by the Works Progress Administration in Tennessee. Constant improvements by the City of Memphis have made the Municipal Airport one of the few now able to handle the new, large aircraft.

The Memphis administration building is a three-story architectural concrete structure with metal and glass control tower on top for control of traffic arriving and departing at the field. The building has a full concrete basement housing the transformer for lighting system and natural gas furnace heating system.

Walk C. Jones and Walk C. Jones, Jr., of Memphis, were the architects for the new building which was erected through the cooperation of the Memphis City Engineering Department and the Works Progress Administration.

This modern building is located near the south end of the field's ample 407-acre layout. The first floor includes a spacious lobby, restaurant, ticket offices for the airlines servicing the field, and rest rooms. On the mezzanine are stewardesses' room, operating offices for the airlines, and quarters for the Department of Commerce and the Weather Bureau.

The airport manager's office and other administrative offices are located in the smaller third floor section with the control tower directly above. In the full-sized basement

*State Administrator, Works Progress Administration.

are also the pilots' room, rest rooms, storage space and the restaurant kitchen.

This compact, efficient plan is enclosed by a structure in which beauty, utility and durability are expressed by the use of architectural concrete—a modern material designed for maximum construction economy. Smooth-formed concrete, effectively combined with glass, produced simple, dignified facades and a delightful interior—for the concrete walls are exposed inside and out.

While the concrete surfaces are generally plain, molded detail is introduced as accent notes in the design. Narrow fluting is used in all spandrels, a treatment which provided sufficient shadow detail to tie first and second-story fenestration together in tall vertical panels. Dentil bands occur at window heads and around the slightly set-back coping of the two wings.

A large circular bay window extending the entire height of the first two stories give a magnificent view of the field. This side of the building is given added interest by the concrete wall which supports four large, lantern-type lights.

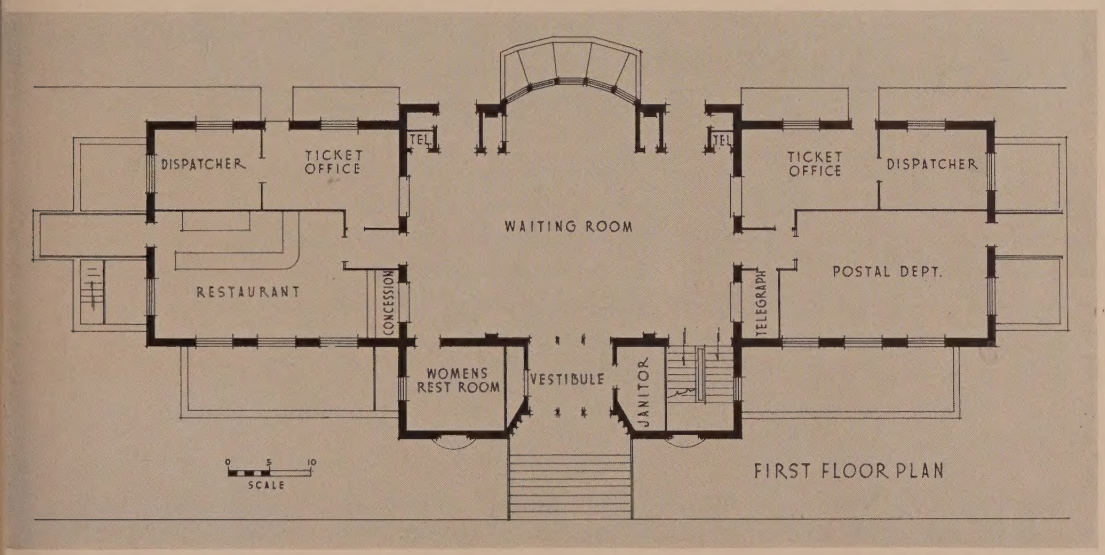
stenciled on the beams. Modern chrome steel and leather furniture is used throughout.

The building houses the operating offices of the American Airlines, the Chicago and Southern, and the Eastern Airlines. All work was done by the Works Progress Administration of Tennessee under the direct supervision of R. W. Jones, chief engineer of the WPA, and William B. Fowler, Memphis city engineer.

The approximate cost of the building was $135,000 of which the sponsor, the City of Memphis, furnished about $60,000 in materials and non-relief labor.

With continued improvements and increasing interest Memphis promises to be the Midsouth capital of aviation.

In completing the airway system in Tennessee, the WPA has received full cooperation from the Bureau of Air Commerce and their suggestions and recommendations have been followed scrupulously. All major airports in the state are designed to accommodate any ship now in service or in immediate contemplation, and are so laid out that they may be expanded to meet future developments.



Ample space and efficient layout are features of the plan. The building is three stories and basement.

A concrete wall separates the field from the building and adds a decorative touch.

With future needs in mind, the building was so designed that inner partitions can be moved to readjust room divisions if that is ever desired. There are no inside columns, the load being carried by reinforced concrete beams supported by the exterior walls. Floor conduits also have been arranged so that future connections for the intercommunication system, telephone and lights can be obtained at any point. Outlets are spaced two feet apart. Interior finish, aside from the concrete walls, includes terrazzo floor in the lobby, wainscoting of Tennessee marble and baseboards of Belgian black and white marble. The ceiling is painted twilight blue and is dotted with stars, while airplanes are

Armory for the 107th Pennsylvania Artillery

By Edmund George Good, Jr., Architect

THE necessity for squeezing a quart into a pint brought architectural concrete to central Pennsylvania.

The Battery A, 107th Field Artillery armory for the Pennsylvania National Guard at Harrisburg, which was designed in 1935 to cost approximately $75,000, was required to be built in 1937 for the same amount. Bids on the original plans were in keeping with the generally advancing building costs, but so far out of line with the available funds that they were rejected.

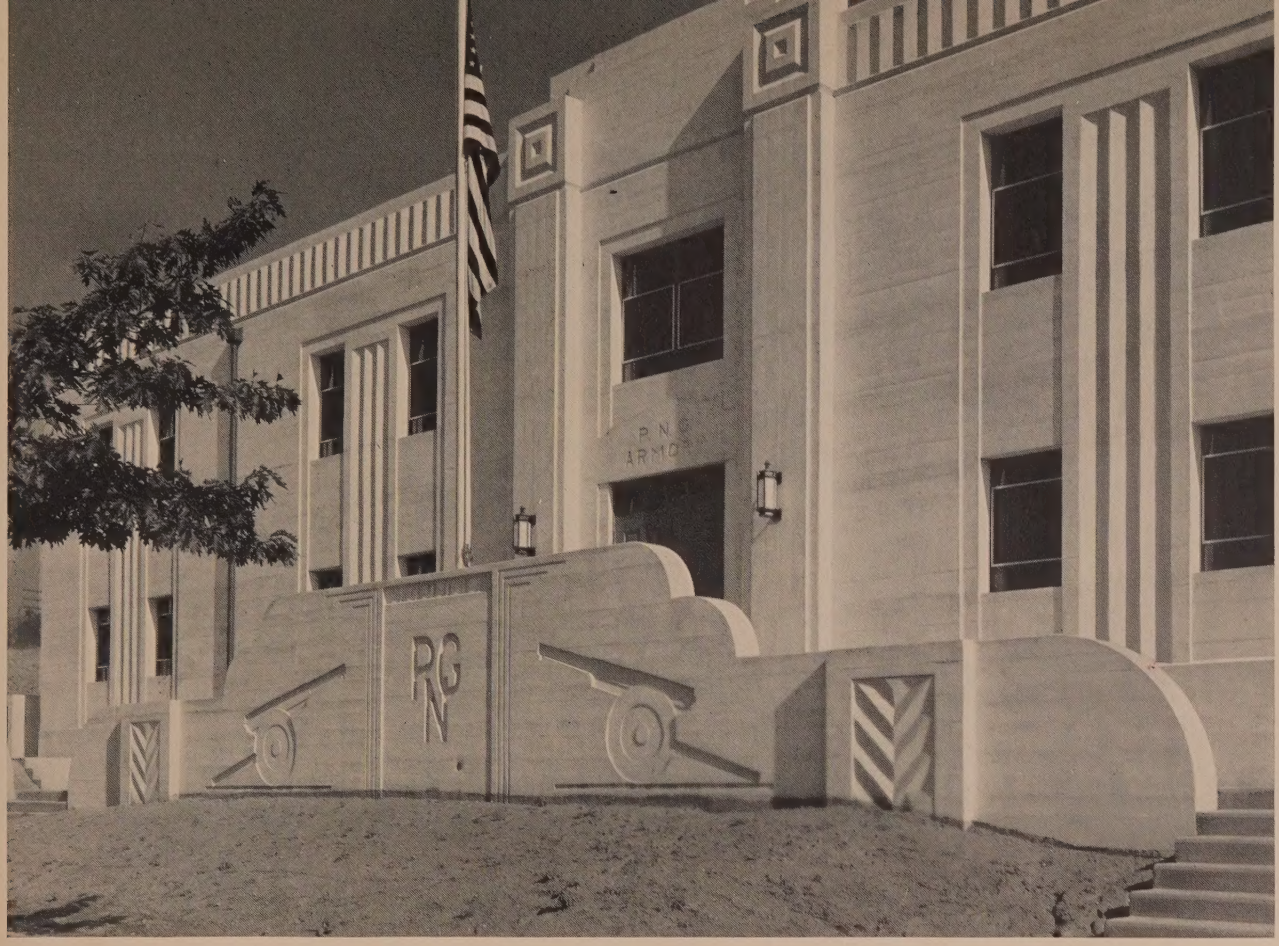
Plans, made in consultation with the Battery Commander and the State Armory Board, called for a T-shaped building housing administration, classroom, lockers and other facilities in the head element, and a garage and drill hall in the stem. The drill hall and garage had been laid out to accommodate cannon, caisson, trucks and mechanized equipment for which space demands were inflexible. The usefulness of the armory was dependent upon maintaining dimensions for the stem of the T which would conform to requirements of the equipment, whereas its usefulness as an organization and training center was dependent upon maintaining adequate size in the head element.

Confronting the architect, therefore, was the problem of cramming a $108,000 building into a $75,000 allotment without reducing the size of the structure by any material amount, and without reducing its structural safety by a single iota. The only solution lay in finding a type of construction which would permit one building dollar to do 25 per cent more work without detracting from the quality of that work. The architect had two months to solve this problem, and to complete his design in the new medium.

A rapid survey of cost figures on relative types of construction indicated that this thing known as "architectural concrete" might offer a way out. Consultation with others who had previous experience with architectural concrete confirmed the opinion of the architect. After careful study with a view to relative simplicity in placing concrete, the architect was able to revamp his design, and with very small reduction in the space originally specified, was able to produce a design which was entirely acceptable to the State Armory Board.

Since this was one of the first architectural concrete structures in central Pennsylvania, features of this type of construction were thoroughly discussed with the contractors who proposed to bid on the job prior to the preparation of their proposals in order that all details would be well understood. The lowest bid received was well within the allocation, and consistent with the estimate prepared for the job. The quart order had been squeezed into the pint pocketbook.

Stern economy called for architectural concrete for the new Harrisburg, Pa., armory, and careful planning and studied craftsmanship produced this beautiful structure. The building cost $75,000. Edmund George Good, Jr., was the architect and J. E. Shreadley, the contractor.



Careful attention to form construction and control of concrete mix resulted in sharp formed detail. Use of wide form boards gives strong character to the walls. As a final finish the walls were given a paint coat which did not obscure the form board marks.

Both the contractor and the architect continued to learn about concrete and its possibilities throughout the building operations. The first thing which became apparent to the architect was the absolute necessity for ample bracing of forms, and for careful attention to adjustment of all clamps and ties. The next thing of importance was to insure the careful placing and working of the concrete in the forms.

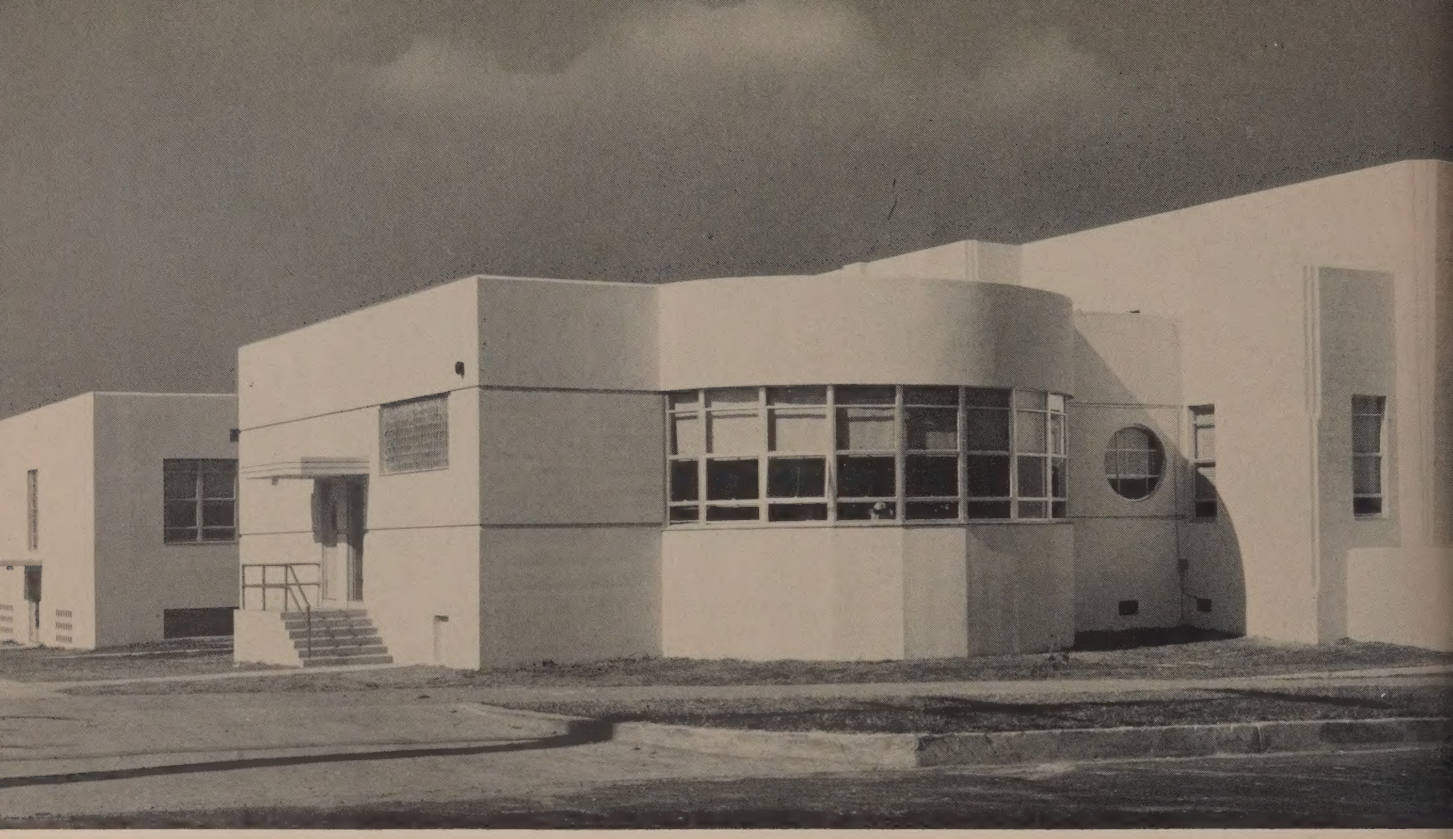
It is the architect's opinion, based on observation of this job, that for the first architectural concrete operation undertaken by a contractor, probably the surest way of obtaining satisfactory results would be by combining careful puddling with exterior vibration. Doubtless with a well trained and experienced crew somewhat less puddling would be required by careful coordination of exterior and interior vibration, but the sure way to obtain clean-cut work is thorough spading.

A third important point learned by both contractor and architect in "going to school on the job" was the necessity for varying the whole concrete placing technique in accordance with the requirements of the mix. Weather conditions, especially, had greater bearing on variations in the mix than had been expected.

Photographs of the finished structure reveal the splendid formwork that was obtained. The plain wall areas have a strong character due to the wide form boards which were used both vertically and horizontally to produce the texture. Wide and rather deep fluting was used in tall pilasters forming the window mullions, and the same detail was repeated in the coping. One of the best examples of sharply executed detail is found on the face of the concrete retaining wall in front of the main entrance. Here conventionalized artillery motifs were molded in recess as are narrow reveals and letters signifying the Pennsylvania National Guard. This detail was clean-cut and undamaged as it came from the forms.

Although the 107th's armory was the first architectural concrete building for both the architect and contractor, the completed building was a highly satisfactory structure and brought nothing but praise from the State Armory Board. Exclusive of mechanical trades, the building was erected at a cost of less than 22½ cents per cu.ft.

After my experience with this job I am definitely convinced that, with close attention to detail and willingness to follow instructions, any competent contractor should be able to handle architectural concrete in a satisfactory manner.



Tupelo School — Symbol of Safety

By A. Hays Town, A.I.A.

ARCHITECTURAL concrete has become a symbol, not only of beauty but of strength and safety, in northern Mississippi. Faced with the problem of rebuilding an elementary school which was completely demolished by the tornado of April 3, 1936, the school board of the Tupelo Separate School District requested that their new building be erected of reinforced concrete in the belief that this type of construction would afford a maximum of protection for their children, and economy of investment. Fear of a recurrence of such a disastrous tornado during school hours was very much in the minds of the board of trustees and the citizens of Tupelo when the school was being planned, and the architects were instructed to bend every effort to provide for the safety of the pupils.

Although architectural concrete permits many departures in style, we decided again on an ultra-modern design, feeling that in this style beauty lies in simplicity, and that when beauty and strength are combined so that each emphasizes the other, the end result is economy.

Due to great losses suffered by the City of Tupelo as a result of the tornado, it was necessary for the sponsors of the new building to rely on federal aid. A bond issue was decided upon to defray part of the materials cost, and application was made to the Works Progress Administration for necessary funds for labor and other materials necessary to complete the job.

Because it was a WPA project, the use of concrete was most appropriate due to the amount of hand labor available, and to the use of local sand and gravel which reflected in economy in material costs.

The plan adopted is in the form of an "H", which provides east and west light for the classrooms. The contour of the site selected permitted a natural play area and shelter, which was one of the prime requisites set up by the school administrators. This layout provides convenient entrance to the main body of the building just slightly above street level, and was responsible for the location of the auditorium directly behind the main entrance. The

When a new school was planned to replace one destroyed by a tornado at Tupelo, Miss., in 1936, the verdict was concrete for this splendid modern design created by N. W. Overstreet and A. H. Town. WPA forces did the work.

The simple lines and plain surfaces that characterize the exterior are employed effectively in the interior decoration.

Main entrance to both classrooms and auditorium is only slightly above street level.

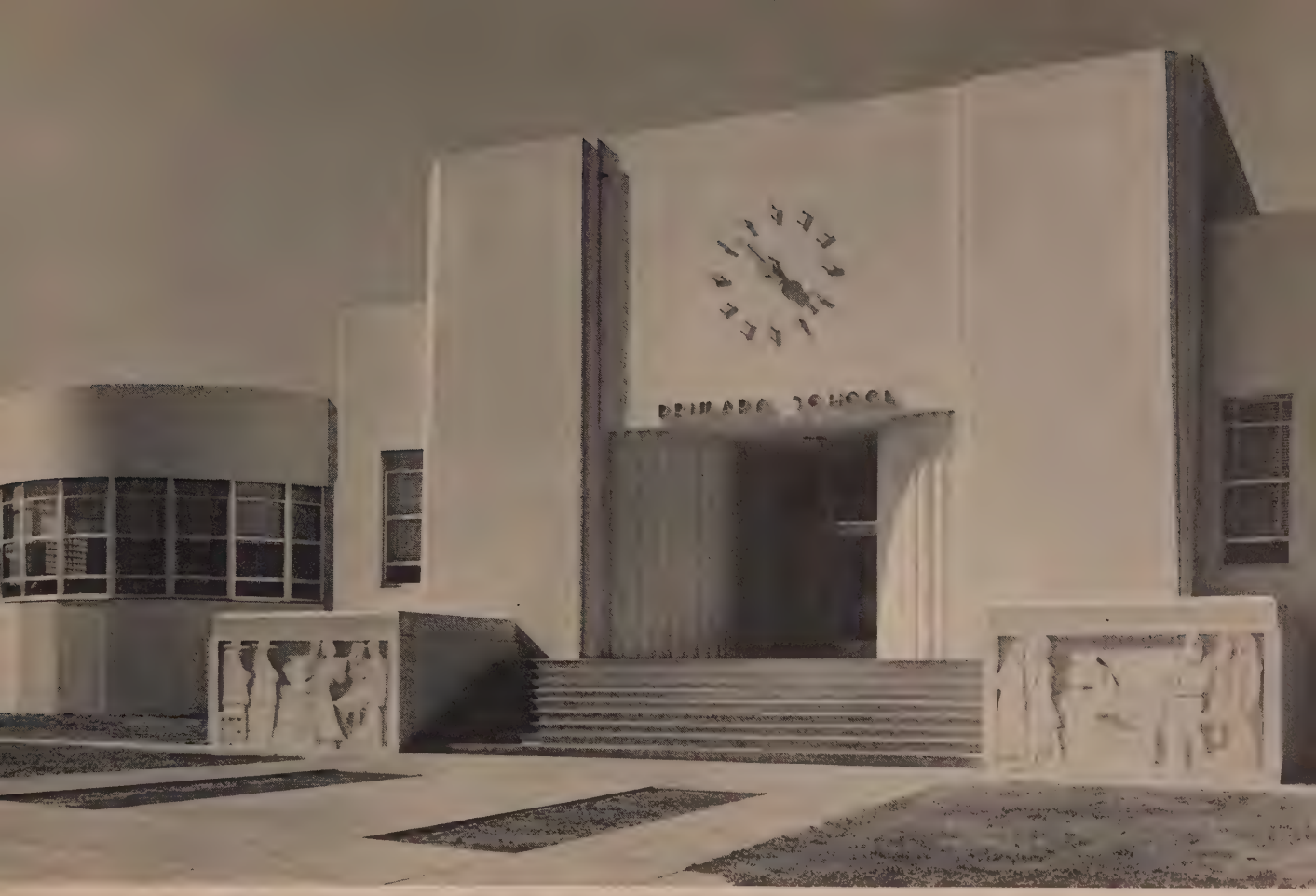
auditorium will be used frequently by parents and the public attending school functions. The topography also permits the kindergarten room to be located on the same level as the rest of the classrooms, and is accessible from the outside at grade level. The cafeteria is conveniently situated underneath the auditorium at the level of the playcourt.

Except for the cast-in-place detail on buttresses of the main entrance, the structure is plain, with wall surfaces treated as simply as possible to permit maximum economy of formwork.

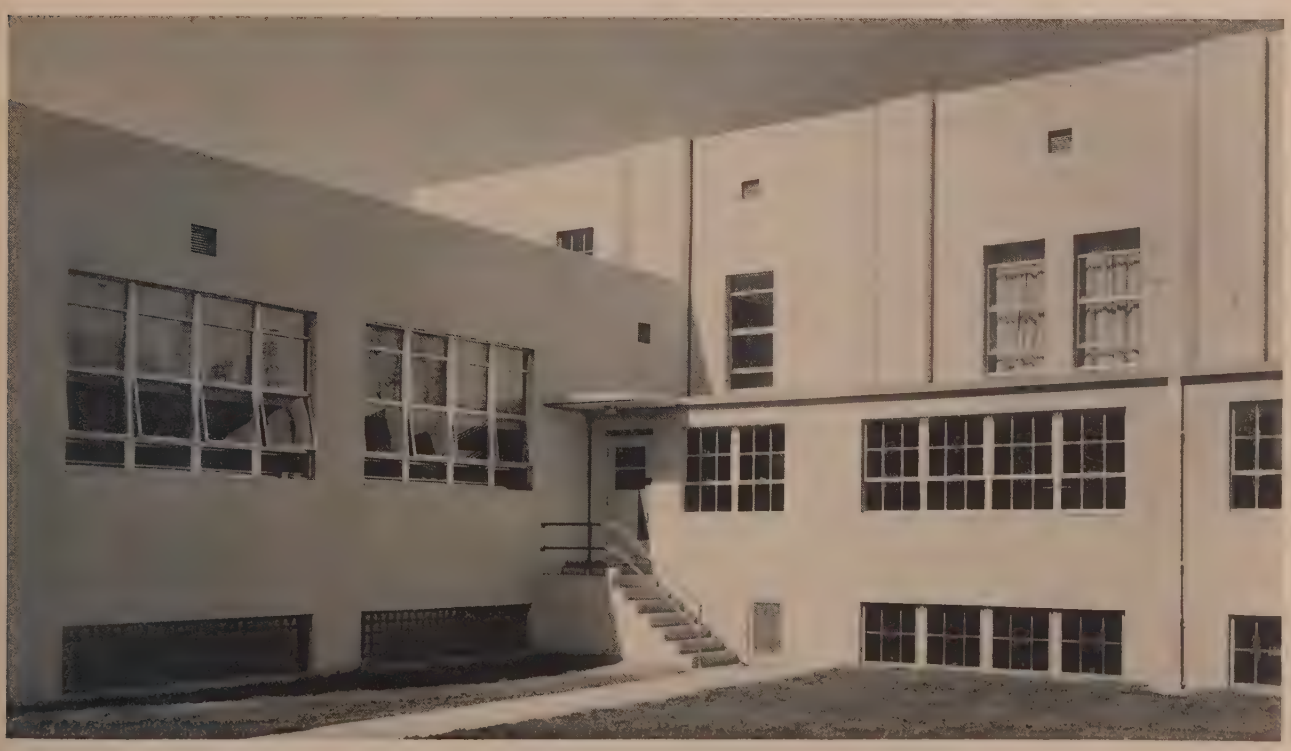
Where window groupings occur in horizontal lines, rustications were used to form construction joints and to serve also to emphasize the horizontal lines of the building. All walls were formed against plywood panels to produce a smooth texture which was finished by rubbing. As the photographs indicate, the result is a light colored mass, accented by entrance reveals and window openings.

J. L. Ford, the WPA construction superintendent, and the various engineers and inspectors who were connected with the project should be commended highly for the high quality workmanship in the construction of Tupelo School, for it was through their efforts that the splendid forming and placing of the concrete was made possible.

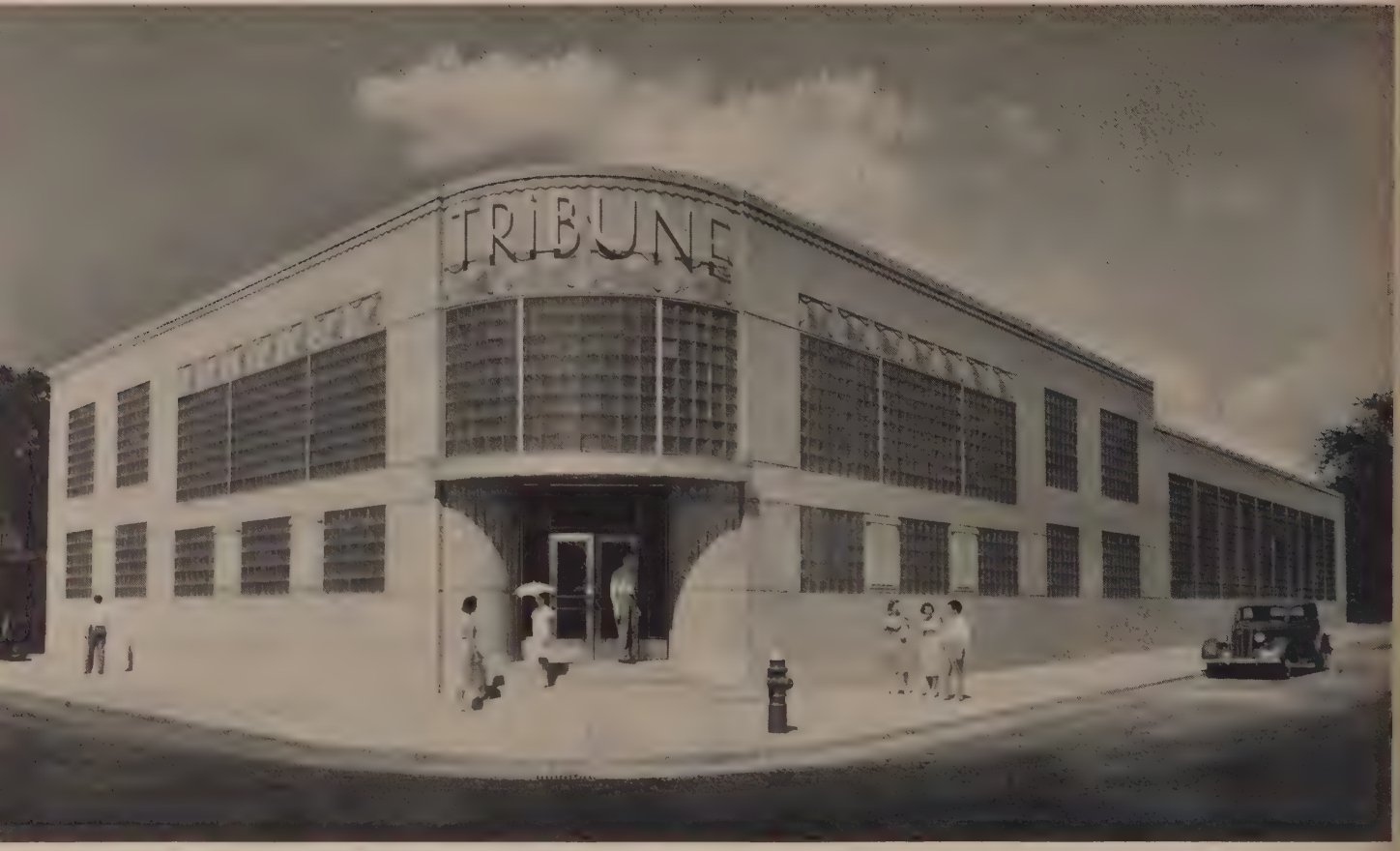
The building was designed specifically for children of kindergarten and primary grade. This is one of the well-lighted kindergarten rooms.



Only purely decorative detail on the entire structure are the two historical plaques on buttresses at either side of the main entrance steps.



The interior court provides a protected play area for the small children attending the new school.



Most modern newspaper plant in the Middle West is the new home of the LaCrosse, Wis., Tribune, *member of the Lee Syndicate newspapers. Kruse and Parish of Davenport, Iowa, were the architects and Theodore J. Molsahn and Sons, La Crosse, were general contractors.*

Fourth Estate Goes Modern

By W. O. Kruse*

OLD newspaper men of the green eye-shade era would never believe that the building completed last year for the La Crosse, Wisconsin, *Tribune* and *Leader-Press* is a newspaper plant. Instead of a musty loft building with narrow windows, bad ventilation and incessant noise, it is a modern industrial structure with large wall areas of glass block and all-year-'round air conditioning system. Floors, walls and ceiling are covered with sound-absorbing materials and the entire building is insulated against heat gain in summer and heat loss in winter. It is the answer to the owner's demand for a most modern newspaper plant.

The building is one story and mezzanine with a full basement which extends under a driveway at one end of the lot. It is a reinforced concrete and structural steel frame building with architectural concrete exterior walls. All exterior exposed metal is aluminum and natural daylight illumination is obtained through glass block walls. These structural materials frankly express their function in the plan arrangement and in the exterior architectural design.

The main entrance, located at the corner, is deeply recessed and flanked by fluted concrete pylons. Above the entrance is an aluminum canopy in which lighting troughs have been built to throw light down on the steps and upward to illuminate the circular glass block corner bay and

*Kruse and Parish, Architects.

the aluminum shadow letters above. The ornamental frieze over the corner is a repeating motif symbolizing continuous newspaper production by means of conventionalized gears, paper rolls and subframework of a section of the press in the reel room.

Treatment of the balance of the exterior is in the simplest possible arrangement of masses to provide maximum daylight illumination. Divisions of these glass areas were made only where walls divide the floor areas, or where floor slabs divide the height.

The layout of the building provides the greatest efficiency and mobility for the many and varied operations that are involved in editing and producing a modern newspaper.

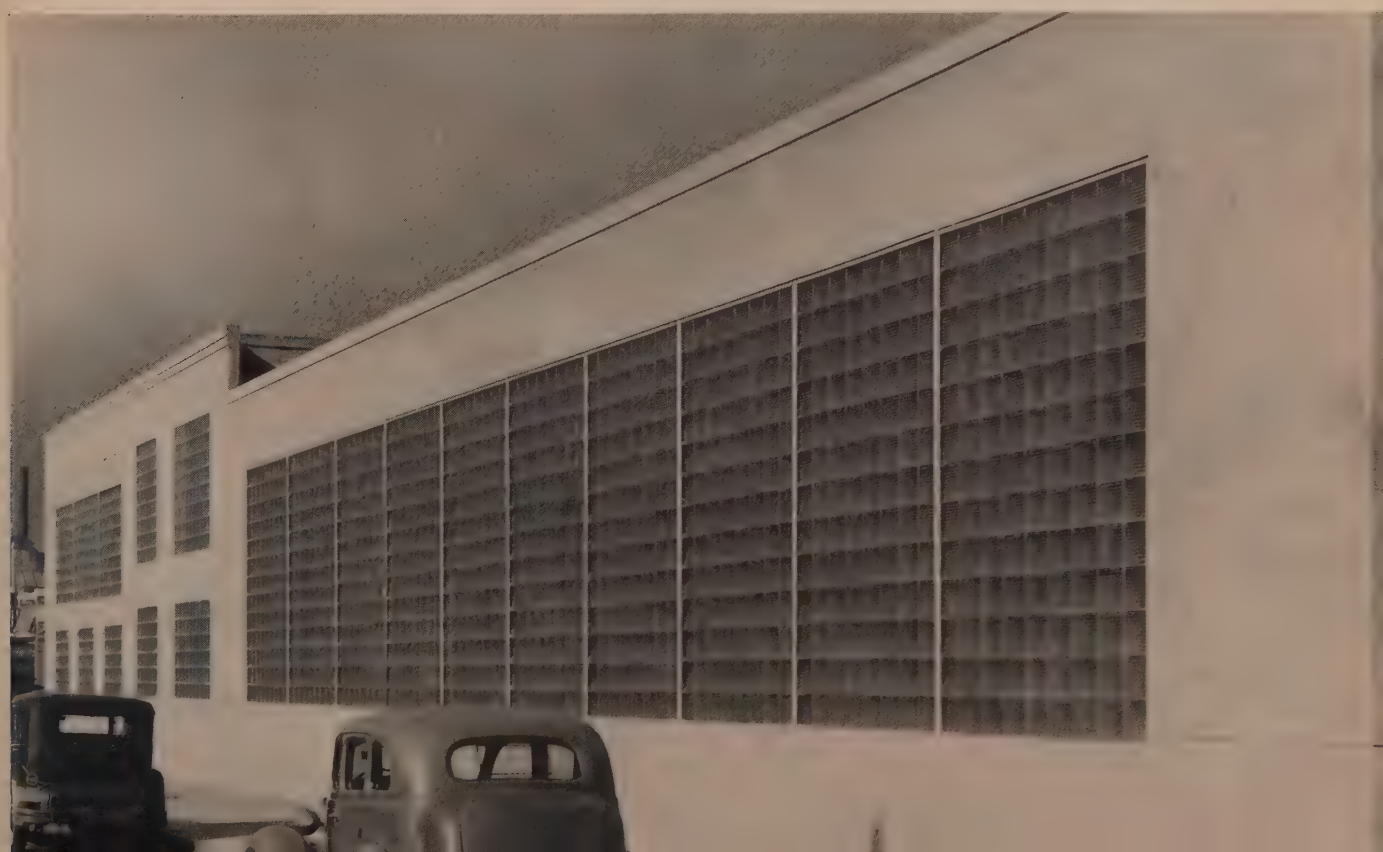
One of the most interesting features in the construction of the building is that intensive work was carried on during the coldest winter months. Most of the concrete was placed during temperatures recorded at freezing and below. In fact, the last runs were made in a blinding snowstorm. Because normal precautions were taken, concreting went on without interruption, and the job was completed before schedule. Water used in the mix was heated, and a steam boiler was used to heat the aggregates. After the walls were started, salamanders were kept burning inside the building to eliminate frost dangers. Thermometers were placed at various points under slabs and on top of slabs under protective covering after each placement of concrete. Temperatures were kept above 40 degrees and in some cases registered up to 70 degrees for 48 hours after placement even when weather conditions were below freezing.

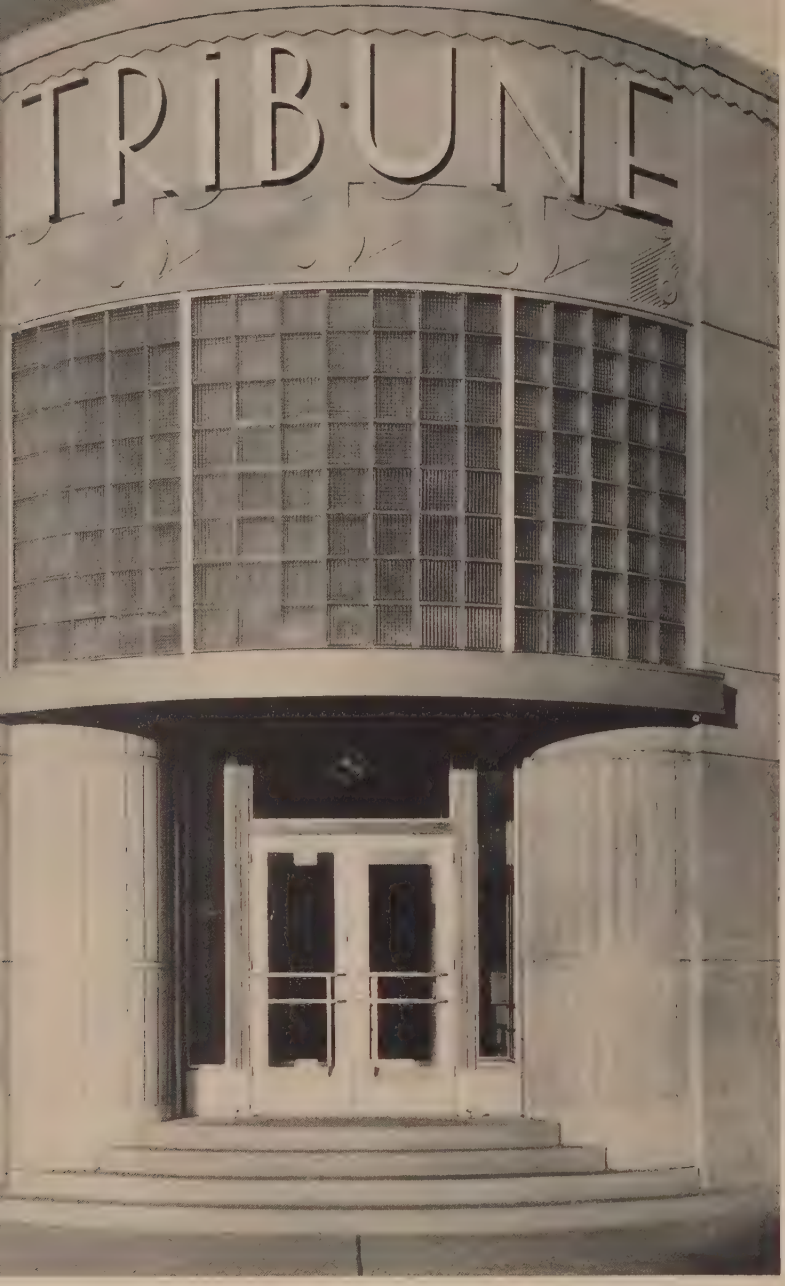
The 8-in. walls of the building were cast against plywood forms in convenient lifts of 6 or 8 ft. The fact that horizontal rustications coincided with construction joints made placing easy. One departure in construction practice that proved most efficient was the use of a crane to lift buckets of concrete up to the platform instead of the usual hoist. The crane, which operated with a 30-ft. boom, could be moved around the building to the point of deposit, which saved a great deal of time of the buggy men. Concrete was placed with metal trunks, which were easily inserted in the forms without disturbing the reinforcement, and splashing the sides of the forms was avoided.

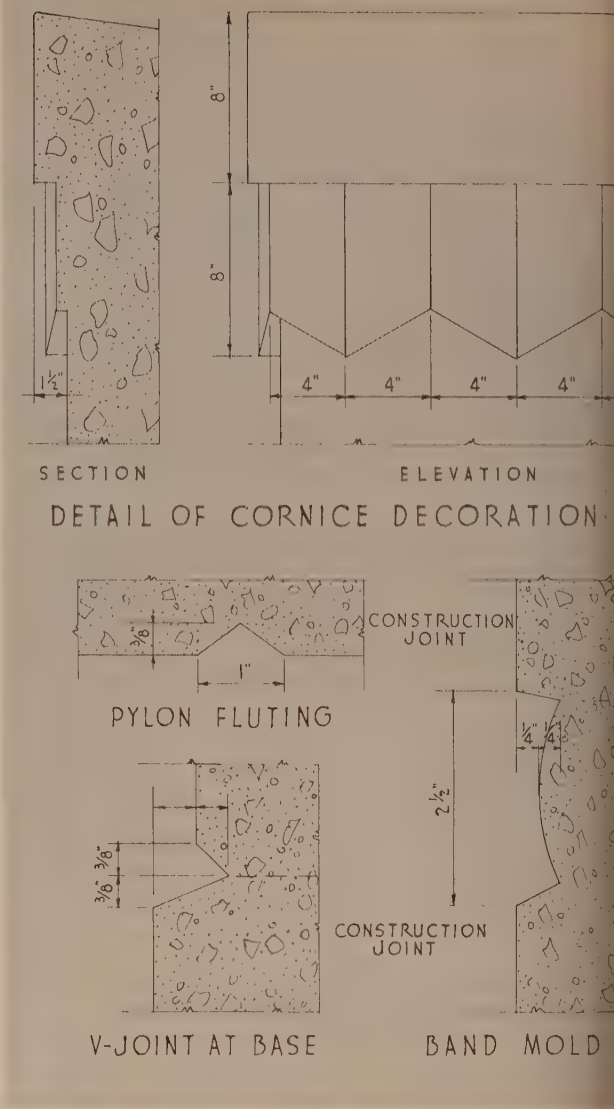
A Colorcrete machine used for cleaning the walls proved most efficient. A grout mix of 1½ parts light sand and 1 part portland cement of which ⅓ was white cement, was applied to the walls with the machine. Immediately following the application of grout, wood floats were used to scour the surface and fill in the small air holes and other superficial blemishes. After the grout had partially set the excess was skimmed off with the edge of a steel trowel. Finally all trace of grout was removed by wiping with sacking. This procedure filled in the small voids and air holes on the surface without changing the original finish of the walls, and at the same time removing construction dirt and discoloration. As the pictures indicate, the resulting color of the building is uniformly light.

Plaster waste molds were used for the decorative frieze with milled wood molds for the dentil band at the coping. The rustications were made by nailing strips of wood to

Air conditioned for both winter and summer, the building is illuminated by large areas of glass block.







Ornamental detail on the building is limited principally to a band around the coping and to a molded frieze above the second story window heads. This frieze, which symbolizes newspaper production, was produced by waste molds. All other details were formed with wood.

the form liners at construction joint levels.

Although all installations are of the most modern type, including cork insulation for ceilings and walls, the total cost of all building contracts amounted to approximately $180.000, which is considered a most reasonable figure.

The building was designed and built for the Lee Syndicate group of newspapers, of which E. P. Adler, of Davenport, Iowa, is president. The La Crosse architectural firm of Boyum, Schubert and Sorensen was associated with the architects in supervising the construction of the building, and supervision was in direct charge of Carl Schubert. Theodore J. Molsahn and Sons of La Crosse was the general contractor and Beling Engineering Company of Moline, Illinois, developed the air conditioning design.

The difference between cleaned and uncleaned concrete surfaces can be seen in the photograph below which was taken while the exterior walls were being cleaned.

Architectural CONCRETE

ARCHITECT · ENGINEER · CONTRACTOR

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The SOPRANOS play second fiddle, say (page 3) B. H. BACON and JOHN P. PARRISH, about the Indiana Armories . . . COL. HARRY S. BERRY describes (page 6) the newest AIR-LANE depot . . . You can squeeze a quart into a pint, declares (page 8) EDMUND G. GOOD, JR., who did the squeezing . . . BLOWING about this job won't hurt it, says (page 10) A. HAYS TOWN who cleaned up in the wake of a TWISTER . . . The old DAILY BUGLE was never like this and W. O. KRUSE tells (page 14) why . . . A treatise on WEAKENED PLANE JOINTS may be found (pages 18 and 19) in the A.I.A. data sheet . . . FIFTY-ONE apples a day wouldn't keep them away from their new home, says (page 20) FRED TOWNLEY . . . A. F. ROSENHEIM looks (page 21) at FIFTY years of American architecture . . . How a 25-year-old DREAM walked up and paid its own way is described (page 24) by FRED L. SWARTZ . . . J. E. COYLE found out (page 26) how to get a good night's sleep . . . FITZ-HUGH SCOTT discusses (page 29) a stage for 1,000 ACTORS plus sound effects . . . A thesis in which EDWARD F. SINNOTT declares (page 32) that the SHOW'S not the only THING . . . MANY MEN made SHORT LIFTS desirable (page 34) according to DAVID C. BAER.

In Last Issue

HADLOCK KRILL COMPANY, Cleveland, was contractor on the CRIPPLED AND DISABLED ASSOCIATION BUILDING—We're sorry for the omission.

Safety at Bargain Rates

IN practically all the articles in this issue the contributing authors have emphasized that one of the prime reasons for selection of architectural concrete has been the added safety value that may be achieved through the use of this building material.

Ordinarily one expects to pay more for an added value in the belief that a desired advantage is always worth a premium. It has been maintained for some time that the advantages concrete holds in firesafety and resistance to violent winds and earthquake stresses can be purchased at no greater cost than ordinary construction. In fact, actual cost figures taken at random from numerous projects have frequently shown that concrete costs less than other types of construction.

With the accumulation of data, even more convincing evidence that architectural concrete will cost less in the vast majority of cases is revealed by an analysis, just completed, of 16 widely scattered projects. Alternate bids were requested on these buildings by the architects with architectural concrete and one or more nominally equivalent masonry materials as alternates. The results of the bidding are interesting.

A total of 128 contracting firms presented bids. Of these, 98 bid concrete lower than the alternate materials; 9 contractors bid concrete even with the alternate; and 21 bid concrete higher. In 13 of the projects in which concrete was the lowest bid, concrete was an average of 4 per cent lower than the lowest alternate bids based upon the total cost of the jobs. In the 3 projects in which the alternate bids were lowest, the alternates were bid only 0.25 per cent lower than the lowest concrete bids.

Considering the fact that the walls of a building represent about 15 to 25 per cent of the total cost of the job, the saving of 4 per cent made by the use of concrete rather than any other comparable material is highly significant. In reality the saving in wall cost accomplished through the use of concrete was therefore approximately 16 to 27 per cent. Even these appreciable cost differences, while interesting, will always fluctuate and are therefore not so important as the fact that 83 per cent of the contractors bidding for these jobs believe they can build in concrete, with all of its added safety values, for the same or less than they can build in other materials. And 76 per cent are ready to build it for less.

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WEAKENED PLANE JOINTS

ALL masonry materials shrink and swell upon loss and gain of moisture in much the same manner as wood except to a lesser degree. Such volume changes set up stresses of considerable magnitude in any structure because there is always some restraint against free movement between the component parts. These stresses exist in architectural concrete buildings and should be taken into account in the design. It would be uneconomical and impractical to provide a sufficient amount of reinforcement to prevent cracking entirely. For all practical purposes, however, the same result can be accomplished by controlling the location of cracks and making them so inconspicuous that they do not affect the appearance of the building. This can be done effectively and inexpensively by providing weakened plane joints in the walls at proper intervals.

Weakened plane joints are simply planes of weakness made by tacking wood or metal strips to the forms which leave narrow vertical grooves in the concrete on the inside and outside of the wall. The joint is further weakened by stopping off or cutting one-half of the horizontal reinforcement at the section. The narrow groove on the outside is filled with non-staining, concrete-colored calking compound to prevent penetration of moisture. Typical details are shown in Fig. 4.

Fig. 2. In the Bellingham, Wash., High School the weakened plane joint that can be seen faintly beneath the middle window in the picture is wholly obscured in the fluted spandrel over the windows.

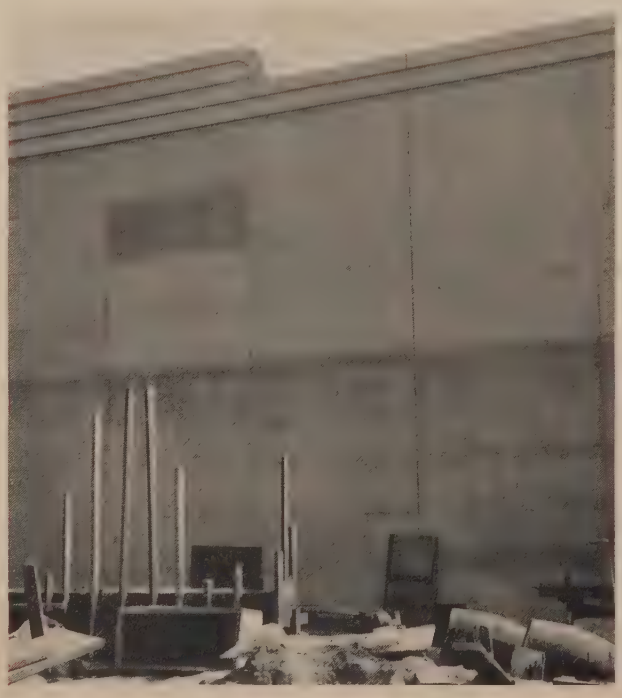

Fig. 1. The inconspicuousness of weakened plane joints even in a flat wall surface where no effort has been made to conceal them except by the arrangement of the plywood form panels is shown by this construction view of the NBC studio in Hollywood, Calif. The weakened plane joint is at the right center of the picture.

Absolutely definite rules for the location of weakened plane joints cannot be given. Each job must be studied individually to determine where joints should be placed. It is customary to locate joints about 15 to 25 ft. apart in the exterior walls and also in any exposed, cast-in-place interior walls. In walls already weakened by the presence of openings, which would tend to cause a crack at such places, the joints are usually located at the centerline of the opening, or in case several windows are grouped together with narrow mullions between them, at the centerlines of the end openings of the group, unless very near the corner of the building. Where there are steel columns embedded in the walls which may weaken the wall section even more than nearby openings, joints should be placed in the plane of the columns.

Joints should begin at the top of the wall footing. They should extend on the outside face of the wall to the top of the parapet, thence over the top of the parapet and down the back of the parapet to the raggle strip. On the inside face the joint extends from floor to ceiling. (See Fig. 7—Wall Section.)

It has not been customary to provide weakened plane joints in the floor or roof slabs where they join the walls.

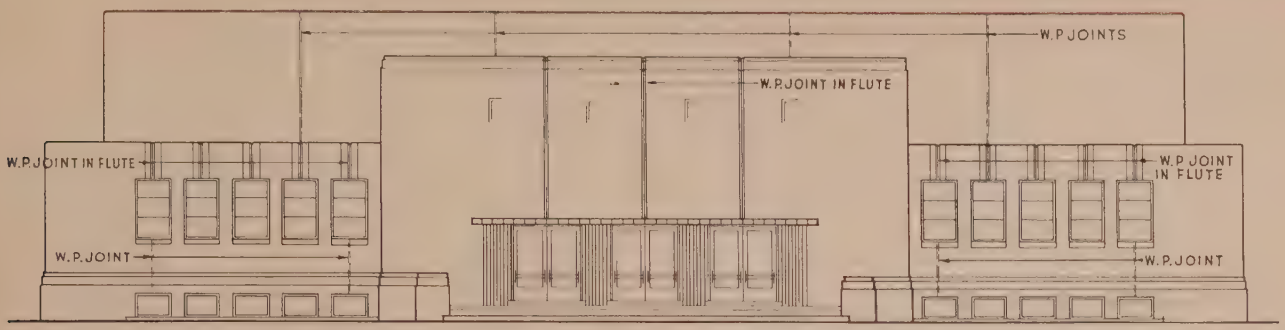

FIG. 3 - ELEVATION OF BUILDING SHOWING LOCATION OF WEAKENED PLANE JOINTS
ALL FLUTES TO HAVE SAME PROFILE AS THOSE INCORPORATING W. P. JOINTS

In some cases where ceilings are to be left exposed, weakened planes have been provided in the floors and in those buildings they have been located in line with the wall joints.

In buildings of several stories with a setback at one or more floors, the joints need not be continuous from one level to another, but may be offset at each roof line in order to locate the joints at the best sections in the respective walls as shown in Fig. 3.

The extra reinforcement normally placed at the heads and sills of windows and at the top of parapets should be stopped off or cut at weakened plane joints and one-half of the typical horizontal wall reinforcement also should be cut at these joints.

Fig. 1 shows how inconspicuous weakened plane joints are, even in a flat wall surface where no special effort has been made to conceal them other than locating the joint on the joint line between abutting plywood panels.

It is entirely feasible to make weakened plane joints a part of the decorative treatment of a wall by locating them in some fluting or vertical rustications. Fig. 3 shows how fluting incorporating a joint may be alternated with ordinary fluting, resulting in an interesting architectural treatment. Fig. 6 is a section through the weakened plane joint fluting. In Fig. 2 the relatively inconspicuous joint below the middle window is entirely invisible in the fluted spandrel above the windows.

Special attention is called to the necessity for using only calking compounds definitely known to be non-staining and which retain their plasticity and adhere tightly to the sides of the joint. Some of the material to be used should be tried below grade, if it has not been used previously, to determine whether it has the desired qualities. Information available indicates the following materials to be satisfactory:

Name	*Manufacturer*
Kuhls Pointing Up Composition	H. B. Fred Kuhls 6411 Third Ave., Brooklyn, N. Y.
Pecora Calking Compound	Pecora Paint Co. 4th St. and Sedyley Ave., Philadelphia, Pa.
Plastikon Putty	B. F. Goodrich Co., Akron, Ohio

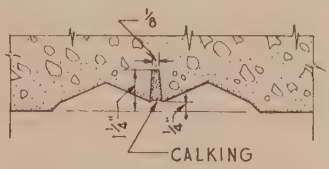

FIG. 6 - W.P. JOINT IN FLUTE

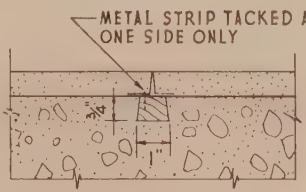

FIG. 5 - PLASTER FINISH AT W.P. JOINT

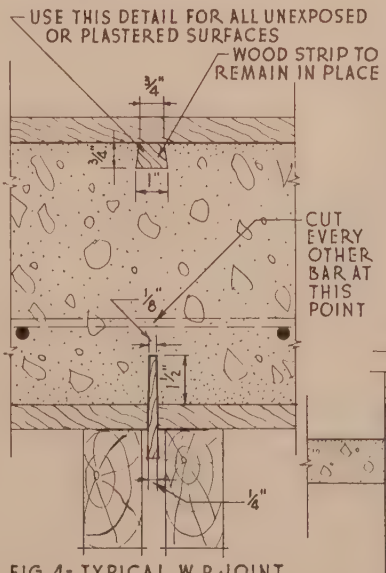

FIG. 4 - TYPICAL W.P. JOINT

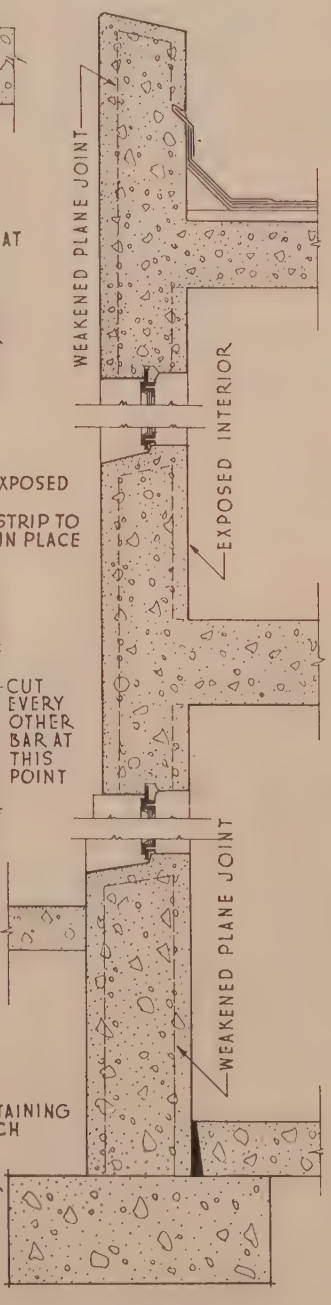

FIG. 7 - WALL SECTION

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Residence for Internes— Vancouver, B. C.

By Fred Townley*

WHEN the board of directors of Vancouver General Hospital decided to erect a residence building for all internes associated with the institution, several important requirements were presented to the architects for guidance in preparing the plans. First, the building must comfortably and adequately accommodate 51 internes who had previously lived in several small homes near the hospital; second, the cost, excluding land, must not exceed $70,000; third, construction and appearance must be of a standard comparable to other permanent structures of the institution.

After studying various types of construction and estimating costs of a building of desired size and appearance, the architects were convinced that the most economical construction would be reinforced concrete—for frame, walls, floors and roof slab.

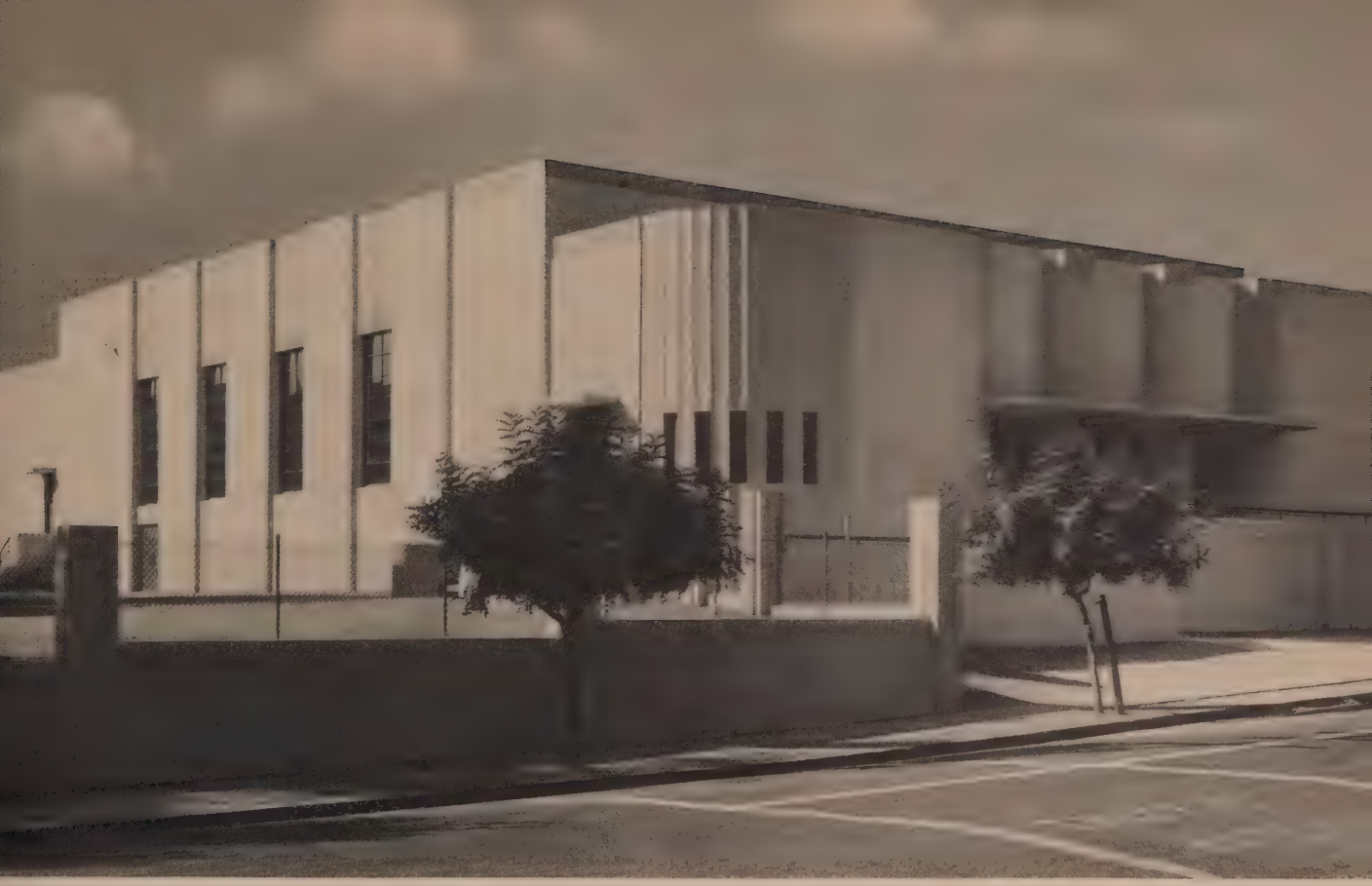
The plans, as they developed, tended naturally toward a contemporary design in which simple wall areas were broken up symmetrically by the arrangement of windows. The four corners on all floors above ground contain sitting rooms serving two bedrooms and private bath, for senior doctors. Remaining space is occupied by single rooms, lavatories and showers. The large corner windows, adjacent to dark colored, horizontally rusticated concrete panels, dominate the exterior design. The same contrasting color of concrete is used in all other spandrels, but with vertical rustication lines grouped in pairs. Recreation and commons room and kitchen are located at ground level.

Ready-mixed concrete supplied for all work on the building was carefully held to a 2,500-lb. minimum at the mixing plant. The smooth-formed walls were thoroughly cured by water and finished with two coats of white portland cement paint.

Work which started on August 24, 1937, by George Snider Construction Company, Ltd., was completed by April 10 the following spring. The 51 internes shortly thereafter took possession of a building which cost $67,524 and which was approved and accepted by the board of directors as a functional unit of the General Hospital group. Thus the three principal requirements set up at the beginning were completely satisfied. *Quod erat demonstrandum.*

*Townley and Matheson, Architects.

Housing and recreational facilities for 51 internes were provided by this modern structure which was erected at a cost of $67,524—a figure safely under the $70,000 allowed for the building. Townley and Matheson were architects and George Snider Construction Co., Ltd., was the contractor.



The assembly hall is one of five units of the new Hollenbeck Junior High School, Los Angeles. Design and construction of this school marked the 50th anniversary of A. F. Rosenheim as a practicing architect and in the use of concrete. This architectural concrete building group was erected by the Baruch Corporation of Los Angeles.

After Fifty Years

By A. F. Rosenheim, F.A.I.A.

MY first substantial architectural commission, a seven story and basement mercantile building of standard mill construction, was completed in 1888 at a cost of $300,000. My most recent commission, a reinforced concrete school erected in five different units, was completed in 1937. The 50-year span between these two projects is a big, round number and a pardonable excuse for harking back to note what changes have developed in architectural and construction practices.

That first building of a young architect must have been quite good, for most of it is standing and in use today; yet when I reviewed the general specifications which turned up the other day in a file dated "1887", I was both amused and awed. For on comparing those specifications with the ones we are expected to provide today, it was apparent that a better building was produced than the specifications seemed to justify. Yet they were standard for that period. I was forced to conclude that the contractors must have been honest men who, apparently, did everything in their power to help me acquire something of a reputation for the production of first-class work.

General use of concrete, as we know it today, was very limited in those early days. Even in foundations and the footings for walls and columns, the practice was to use "dimension stone" from nearby quarries. However, when concrete was used according to rather sketchy specifications

that left much to chance and the contractor's conscience, I recall that good concrete was produced.

The Hollenbeck Junior High School in Los Angeles, my 1937 effort, is modern concrete according to modern specifications. But in design I do not consider the buildings particularly "modern", although the administration unit and assembly hall may possess something akin to the so-called "contemporary style". Personally, I do not hesitate to express the fervent hope that modernistic architecture *is not* a permanent trend. I have a very strong feeling that the bulk of modern work we see the country over has very little claim to architectural beauty, and doubt whether it can be strictly regarded as architecture. More fitting, I should say, would be to refer to the average building in that category as a revolution of new ideas introduced in construction, prompted by more or less unusual arrangements evolved by the architect.

But whatever one chooses to call the style of my Hollen-

The details on the concrete stack correspond with those on the walls of the building.

Fluting and corner fenestration of the administration building are combined in an interesting arrangement.

Massive columns dominate the entrance to the assembly hall. Although this building may resemble the "contemporary style", the architect says it was not intentionally "modern", but a practical solution of the problem at hand.

beck School, it seemed to appeal to the board of education and its architect.

The Board requires that all schools be designed to resist a horizontal force equal to 10 per cent of gravity in conformity with the regulations adopted by the Legislature at the instance of the State Division of Architecture following the earthquake of March, 1933, which resulted in great damage to communities surrounding Los Angeles. These regulations formed the basis of our design and, naturally, led to the use of concrete construction as being the best material to meet the stringent safety requirements.

Main entrance to the administration building repeats the use of wide fluting noted at the corners.

There was no deviation from the use of concrete. The buildings are all concrete—piles, caissons, footings, walls, columns and cross walls for stiffening. Floors, stairways, steps, platforms and retaining walls are concrete, and to top it all off—so are the roofs and the smoke stack. In many instances throughout the group, the concrete floor slabs were finished integrally.

All exterior walls, which have limited ornamentation, were given a stucco finish in two colors. The plain surfaces are pale yellow while the base, the spandrels between first story window heads and second story sills, and the wall copings are a deeper yellow. The combination is pleasing and serves to give the entire exterior a character and texture quite essential to exposed concrete work.

The five units that comprise the school include two classroom buildings, an administration unit, shop and boys' gymnasium, and an assembly hall.

Final total cost of the group was slightly in excess of $785,000, which was next to the largest school project undertaken by the board of education under Los Angeles' $34,000,000 school program.

R. McC. Beanfield was structural engineer for the project and Baruch Corporation of Los Angeles, the contractor.

A 25-year-old dream came true last year when the Scottish Rite Temple was completed at Fresno, Calif. Planned carefully for maximum utility and appearance, it was erected at a total cost of $178,000, including all trades. Assisting the architect, Fred L. Swartz, were W. D. Coates, Jr., associated architect, and Carl Werner, consultant.

Scottish Rite Temple—Fresno, Calif.

By Fred L. Swartz, Architect

FOR 25 years the Fresno Bodies of the Scottish Rite have carefully planned and prepared for the eventual erection of a temple to house the city's several lodges. This long anticipation reached fruition last April with the completion of a temple building which occupies almost all of a 125x150-ft. corner lot at the edge of the downtown area.

Although the exterior design of the new temple is modest, the construction reflects permanence and stability; and the interior arrangement, made after extensive study of other Scottish Rite temples throughout the state, is laid out to achieve the maximum in utility and appearance. The floor plan has been pronounced as probably the finest on the Pacific Coast.

Reinforced concrete was selected for the execution of both the structural and architectural designs of the temple. Use of this material for exposed surfaces permitted great economy in construction and gave the desired qualities of strength and permanence.

Because the floor plans and shape of the lot were rather inflexible factors in the planning, the general appearance of the structure, both inside and out, was largely governed by them. These conditions dictated the outward shape and scheme of massing, and made possible the adoption of a design which gives a feeling of verticality, simplicity and pleasing dignity to all facades.

Exterior detail, as the finished structure reveals, is chiefly limited to decorative treatment of the openings, and all of this was easily produced by means of plaster waste molds set in the forms before concrete was placed. This restrained decoration contrasts favorably with the plain wall areas

which bear the texture of the form boards—1x6 Ponderosa pine boards with rough side facing the concrete.

Satisfactory results in forming were achieved through close control of all operations. Fine and coarse aggregates were carefully selected and kept uniformly graded throughout the work. All concrete was placed from transit mixers, and in order to secure uniformity in the concrete, an inspector was appointed to superintend the batching at the plant before delivery. The mix was 1 part cement to 5¾ parts aggregates. Concrete was conveyed by buggies.

It was found necessary to vary the slump of the concrete, depending upon the location in which the material was to be placed. For instance, concrete with a slump of 8 to 9 in. was used for work around plaster waste molds. Where there was less detail and simpler reinforcement, concrete of less slump was used.

A sufficient number of men were required at each place of deposit to spade the concrete thoroughly. In addition, an electric vibrating hammer was used on each side of the forms, a method which was preferred to internal vibration. The effectiveness of combining thorough spading with external vibration was shown by an examination of the concrete as the forms were stripped. Very few surface blemishes were found and the entire job presented a most pleasing appearance.

After the last of the concrete had been placed, all exterior wall surfaces were thoroughly cleaned down and brushed with wire brushes, hosed off, and then painted with equal parts of white portland cement and white sand to which was added one pint of colorless waterproofing compound per sack of cement. The paint coat was followed with a finish dash coat of equal parts white portland cement and white sand with waterproofing added. The finish surface was sprayed with water for several days to insure thorough curing of the cement paint.

Work which started April 1, 1937, was entirely finished by March 1 of 1938. The general contract was $131,000, with mechanical and electrical trades amounting to $47,000 more. Fortunately, the foresight and long planning for the temple permitted a financial setup under which the building was entirely paid for in cash without any assessments on the members. There is still a tidy balance in the bank for operating costs. This has naturally added to the satisfaction that has been expressed by the members since the completion of the building.

Assisting the architect selected for the project was W. D. Coates, Jr., of Fresno as associate architect and Carl Werner, consulting architect of Alameda, California. The structural engineer was F. W. Kellberg of San Francisco, and Fisher and McNulty of Fresno were general contractors. L. G. Jeffrey, lodge electrician for 20 years, was the electrical contractor, and Frank Hudson was contractor for the other mechanical trades. All connected with the project received splendid cooperation throughout the work from the building committee which comprised W. B. Holland, chairman; Frank Homan, mayor of Fresno; Herbert Levy, W. E. Durfey, Harry F. White, Chester H. Warlow and A. W. Carlson, secretary.

After the exterior walls were thoroughly cleaned down, a paint coat of equal parts of white portland cement and white sand was applied. Over this was added a final dash coat of white portland cement and sand. This textured finish blends well with the rough markings of the form boards.

A desire to prevent a fire such as destroyed the previous school on this site, and to protect children from other hazards, prompted Architect J. E. Coyle to design the new M. S. Cunningham School, Joliet, Ill., in reinforced concrete. Pere Anderson and Co., Chicago, was contractor and Marcus Davis was resident engineer for PWA.

A "Non-Collapsible" School

By J. E. Coyle, Architect

CONCRETE construction, as ordinarily used, had interested me for many years before I used it as an architectural material. I sincerely admired the work that had been done with it elsewhere, particularly on the West Coast, and decided that just as good work could be done here. However, I never quite came to doing a concrete building, probably because of bugaboo stories (told by people who doubtless were without facts) about the performance of concrete in northern climates. The fact that there were no recent examples of architectural concrete buildings in the vicinity of Joliet, Illinois, to show a client if he were willing to listen to concrete did not spur my initiative to try a job in this material.

When I was given the commission to prepare plans for the new M. S. Cunningham School, the thought of concrete arose again, and there were several reasons why it "took". The first was that the old Cunningham School had been destroyed by fire in 1936. About that same time came the horrifying reports of the New London, Texas, school disaster and the accounts of how the walls "bulged and collapsed", which deeply impressed upon me that the school I was about to design should be not only well planned and beautiful, but must be above all a safe structure. The Texas disaster was followed by the Mississippi tornado which demolished at least one large school.

If an architect has a conscience, it goes to work at such a time. Realizing my responsibility for the safety of the children who would use my new school, I decided that if I

wanted to avoid sleepless nights wondering about possible fire, cyclones and explosions, it would be necessary to design to cope with them. These considerations greatly outweighed the possibility of a few temperature cracks appearing in the building and we decided on a "collapse-proof" structure. The new Cunningham School is reinforced concrete—top and bottom, inside and outside—for concrete is the only material that will meet all safety requisites at any price.

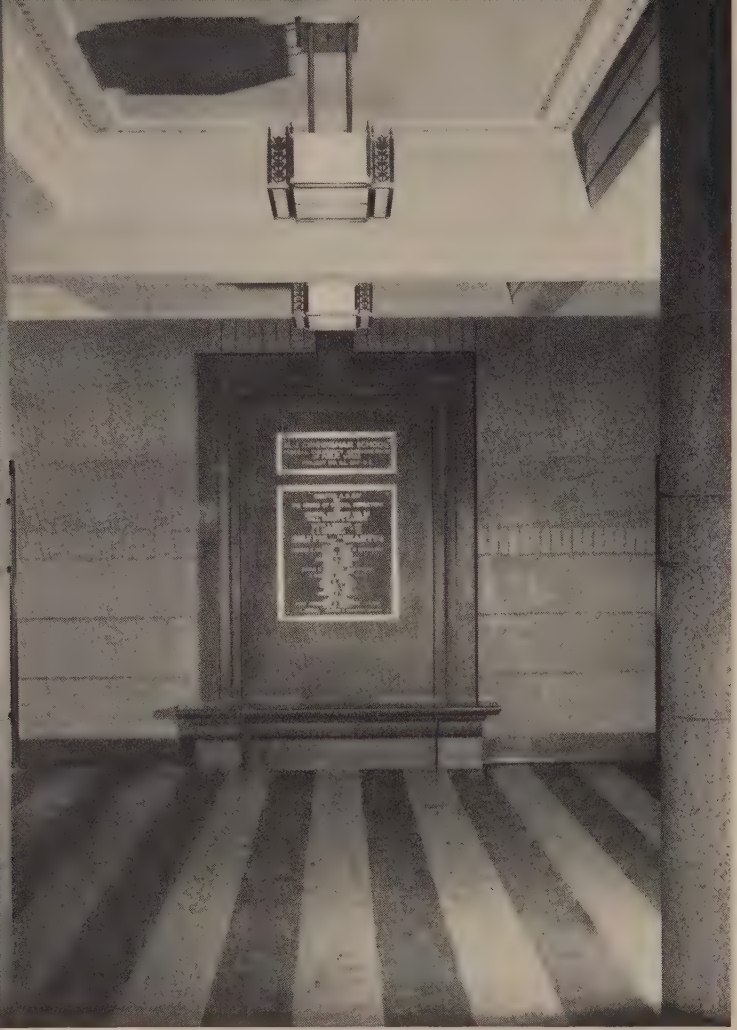
This was a clean break-away from the usual school building construction in this area, but when we visited South Pekin, Illinois, a few months later, we were again convinced of the necessity for a non-collapsible building as a tornado had removed the two upper stories of the school.

Several other factors entered into the final approval of a design in concrete. One was permission of the State Fire Marshal to omit fire escapes from the building because this type of construction did not require them. Another was the conviction that this construction would be relatively free from maintenance cost, that the first cost would be the last major expenditure ever needed for the building. The fact that concrete construction kept more of the building dollar in Joliet—local materials and home labor—did not harm the story.

With the owner's approval for architectural concrete, it was up to my office to produce a building with lasting qualities and good appearance while embodying all possible safety. Ornamental detail was used largely in the upper parts of the building in the form of repeated panels cast against plaster molds. The construction joints were hidden in rustications, and to beat the youngsters to knocking off the corners of the building with sticks, iron pipes and the other odd things they find to play with, all corners were made round. While the rounded corners serve a utilitarian

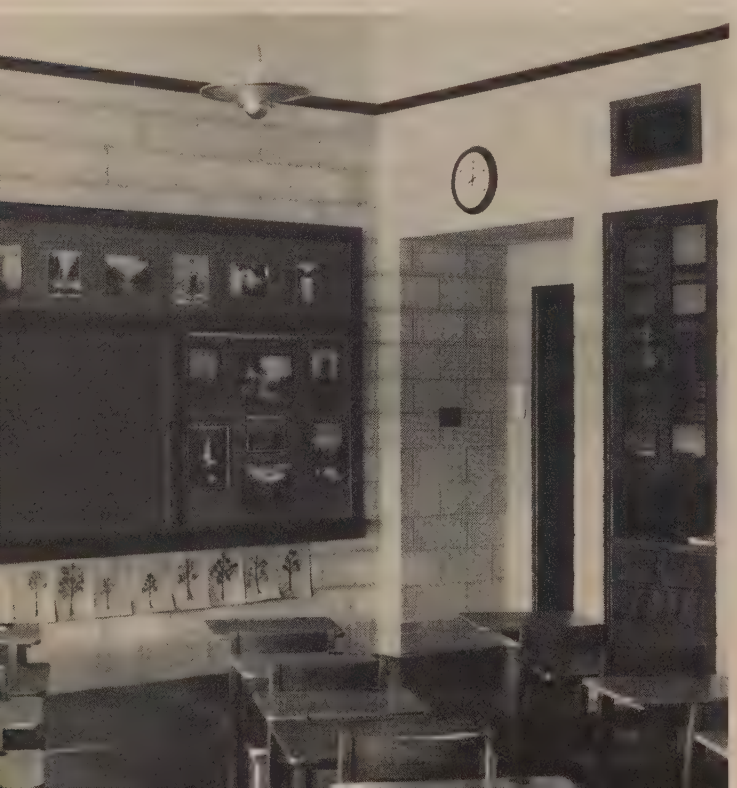
Repeated ornamental details were used about the upper portion of the building. They were cast against plaster molds.

The school is entirely concrete—floors, walls, roof and partitions. The style of architecture is a modern adaptation of ancient Mayan forms. Smooth walls were cleaned down and left in the natural grey color.



Walls of the main corridor and lobby were lined with cast stone in dark green tones. The floor is composition material to absorb sound.

All interior walls are furred with lightweight aggregate concrete masonry for decorative value as well as insulation and acoustic control.



purpose, they were inspired, as were the ornamental details, by the ancient Mayan architecture of Central America.

Dean Palmer of the College of Fine and Applied Arts of the University of Illinois, in commenting on the building said, "This is a building in plan, design and construction that is truly American."

The second story window sills are provided with a capillary drip, and the first story sills are precast with a sump and drain pipe to drip free of the building to prevent streaking.

The walls are carried generally 4½ ft. below grade, except where deeper footings were required to get below the bed of an old creek that formerly ran through the building site.

Walls were formed against 4x8-ft. plywood panels, the arrangement of jointing having been predetermined on the drawing board. The same detail for tops of pilaster and decorative panels was used from 12 to 16 times, so all the ornamental work on the structure cost less than $4,000, which is stretching a bit of art work a long way around a building.

The gymnasium is separated from the classroom portion of the building by an expansion joint which runs through the entire building. The layout is so planned that the gymnasium and two toilets can be locked off from the rest of the building when used for community purposes.

There are 14 classrooms, designed for first to sixth grade pupils. Each room has exposed concrete ceilings and all exterior walls are furred with lightweight concrete masonry which provides insulation value and a degree of acoustic control. The gymnasium also has concrete masonry interior finish. There is no plaster in the building. Halls and lobby are finished in green cast stone.

After the concrete work was finished, the exterior was given a clean-up by applying grout consisting of part white and part grey portland cement and sand. This grout was rubbed in well with a wood float. When it had firmed up a bit the excess was cut off with the edge of a wood float, and finally all traces of the grout were wiped off with gunnysacks. This left a natural grey color, somewhat on the light side.

Cost of the building complete was $184,000, the contract price, plus $695 for "extras", or 36 cents a cu.ft. The extras had nothing to do with the construction, but were due to installation of a better lighting system than was first planned. Work started in December, 1937, and was finished for opening of school in September, 1938.

A few weeks ago the papers carried another nation-wide story, "Teacher marches her pupils from school just before ceiling collapses." I am happy and satisfied with our Cunningham School because—"It can't happen here."

Full stage [illegible] Music. The structure is architectural concrete with a steel-framed dome covered with gunite. The gift of Emil Blatz, it was designed by Architect Fitzhugh Scott. Charles S. Whitney was structural engineer and Selzer-Ornst Co., the contractor.

Temple of Music — Milwaukee

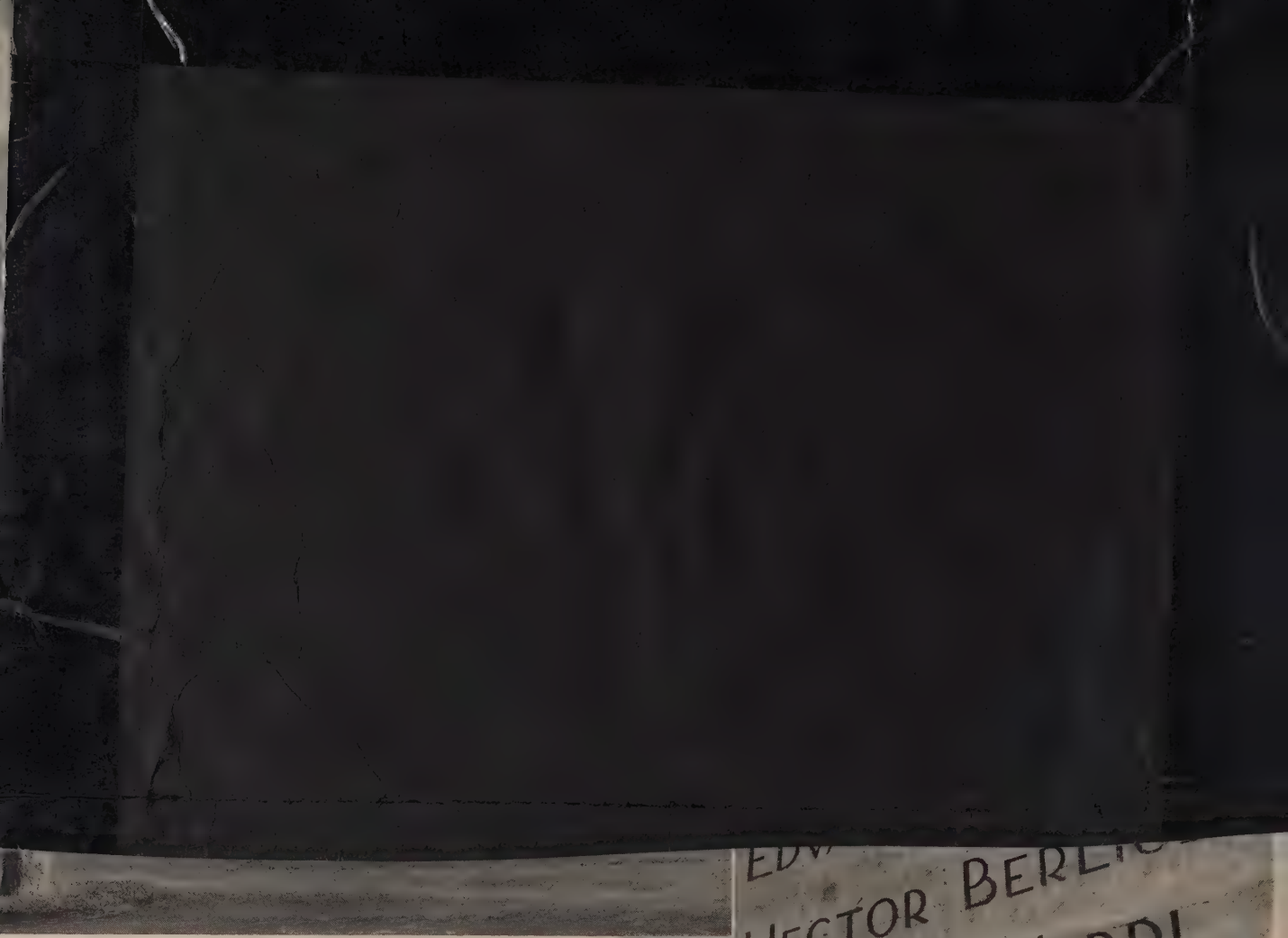
By Fitzhugh Scott, A.I.A.

BEFORE proceeding with plans for a permanent Temple of Music for the city of Milwaukee, made possible through a generous donation from Mr. Emil Blatz, I made a rather extensive study of band shells and other music pavilions throughout the country. The purpose of this study was to determine the trend of outdoor musical entertainment, because a permanent building devoted to this purpose should anticipate future needs. There were some interesting discoveries.

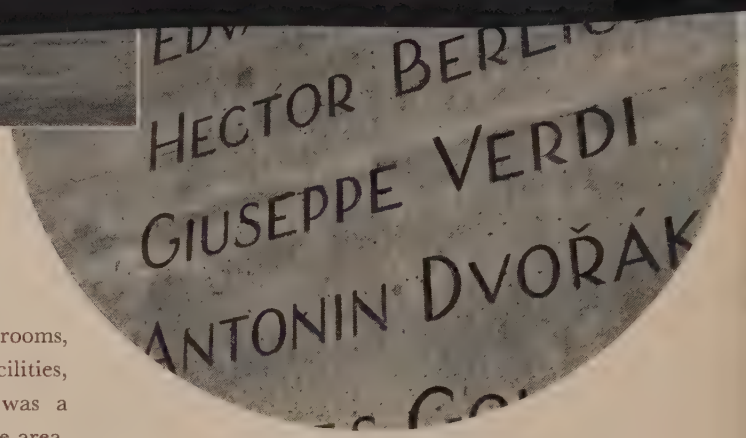
Band music as entertainment is fast becoming outmoded. During the past few summers there have been very few concerts by bands, their place in public popularity being rapidly taken by symphony orchestras and summer opera. Due to the considerable cost of producing operas, the symphony is the most frequent form of public outdoor entertainment, but there is an evident growing interest in outdoor pageantry, produced with local talent.

It was necessary, therefore, to consider the new Temple of Music as a structure equally adaptable to orchestra, opera and pageant production. This thought developed to

On the opening night, many times the capacity of the amphitheater heard the inaugural concert. Photo Courtesy Milwaukee Journal



The great pylons on either side of the shell arch contain the sound equipment that is controlled from the center of the assembly.



Names of the world's greatest composers are sand-blasted into the plain back wall of the structure.

the point where an outdoor theater, with dressing rooms, stage property storage and complete backstage facilities, seemed the only reasonable solution. The result was a design which provided a 100-ft. stage, large forestage area, orchestra pit and an elaborate backstage. In fact, the backstage area represents a larger part of the total cost than the front of the structure. The building as it stands can accommodate any opera, for there is access from the wings at five points on the stage and from two in front. The stage can hold a full-sized symphony orchestra while 100 or more actors have ample space to perform on the forestage at the same time. Two sets of stairways located at both sides of the stage would permit a constant procession of pageant performers from ground level.

The form of the structure, therefore, was determined by present and future functional needs, and is a low, wide, horizontal stage dominated by a great arch. The composition is completed, as viewed from the front, by the tall shell consists of a structural steel frame encased in gunite. The stiffest mix possible was used for all cast-in-place concrete consistent with the requirements of placing, and all concrete was thoroughly vibrated in the forms to produce maximum density. To eliminate cracks that might occur due to extreme temperature changes, expansion joints separate the backstage rooms from the arch, permitting these elements to move independently.

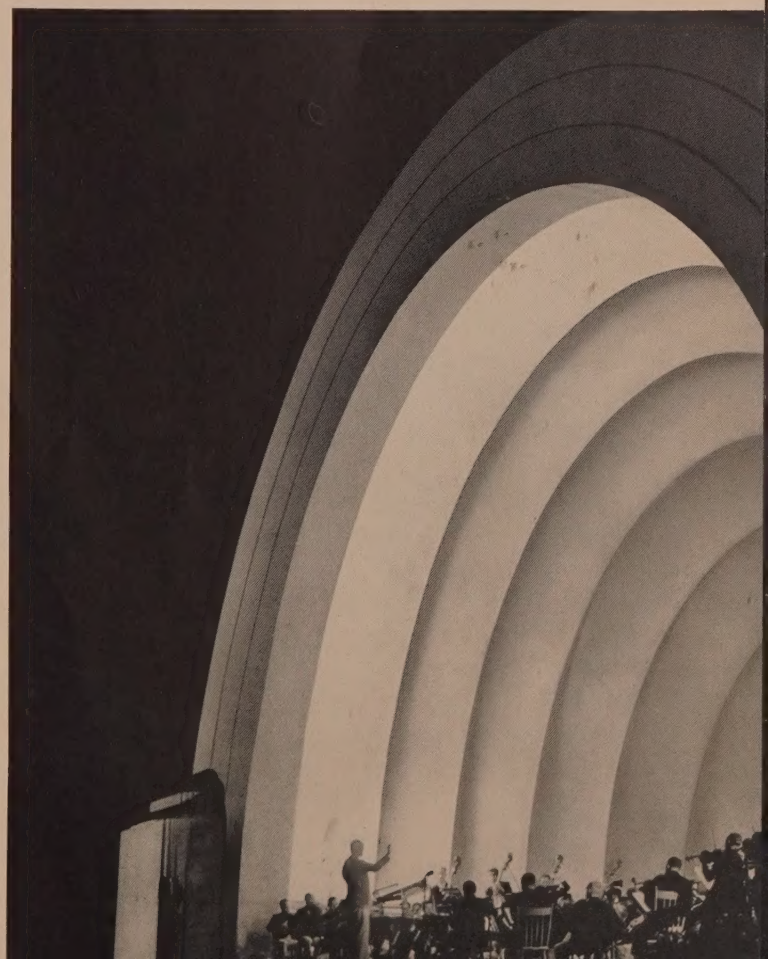
Aside from two plaster-mold panels symbolizing music, orchestra and the dance, there is practically no ornament on the building. There is a bit of flat fluting on parapets

that this work could [illegible] but since that might have broken up the integrally molded character of the building, it was decided to use a sandblast. The result is particularly interesting, since the sandblast process cut the letters sharply, but left pieces of harder aggregate exposed in all the incisions. The lettering has considerably more character than had it been molded.

Although the problem of sound distribution was studied thoroughly in advance of the opening performance, there was great anxiety in the mind of the architect as to how well the amplifiers, located in the twin towers, would carry the music out to a crowd of 20,000. Fortunately, as it turned out, there was no need for that anxiety, for orchestra and voice were distributed satisfactorily to many more than that number on dedication night. The speakers located in the towers are controlled from the center of the assembly and are sufficiently loud to carry over audience noises which are much greater out-of-doors than in enclosed halls. There is, of course, much to be developed toward perfection in sound technique out-of-doors. The sound equipment in the Blatz Temple of Music was intentionally made as simple and inexpensive as possible because current complex systems might become obsolete within a few years.

The Temple of Music was completed at a cost of approximately $125,000. It was formally presented by the donor to the city and county of Milwaukee at the opening night

stage, sound distribution, over which the architect had expressed anxiety, proved to be almost ideal. Recessed lighting reveals the great arch in soft tones at night. *Photo Courtesy Milwaukee News Sentinel*



To lure discriminating suburbanites into a new neighborhood theater, ar... ...beautiful, dignified front for Henrico Theater, Highland Springs, Va. Edward F. Sinnott, architect; Doyle and Russell, contractors—of Richmond.

Design for Discerning Neighbors

By Edward F. Sinnott, Architect

A FEW months ago the writer discussed in these pages the planning and construction of a building for the Richmond Sand and Gravel Co., for which architectural concrete was selected as the best solution to serious problems of flood protection and economical maintenance under unusual conditions. My latest work is of an entirely different nature—a theater building—and here again concrete was the inevitable choice.

The problem involved a prospective owner who had previously been interested in downtown theatrical houses which were hemmed in on each side by other business fronts, in locations where people were drawn for entertainment by many attractions. Now he wanted to build a theater in the suburbs—a neighborhood house in an open lot in Highland Springs, Virginia, which would be visible from at least three sides and bound to exist on its own merits for a long time to come. He had many operation problems to consider—feature film selection, seating facilities, acoustics, lighting, accommodations and other interior appointments which, he felt, must be equal to or better than those of a metropolitan theater to satisfy the potential theater-goer of that superior locality.

My problem was to attract the interest of these discerning neighbors and of casual passersby, through the appearance of the exterior, and to do it economically.

Because this project was a pioneering venture on the part of the owner, Charles A. Somma, he did not wish to invest a large part of his capital outlay in expensive materials and ornament to produce an attractive exterior. The problem then resolved itself into an examination of econom-

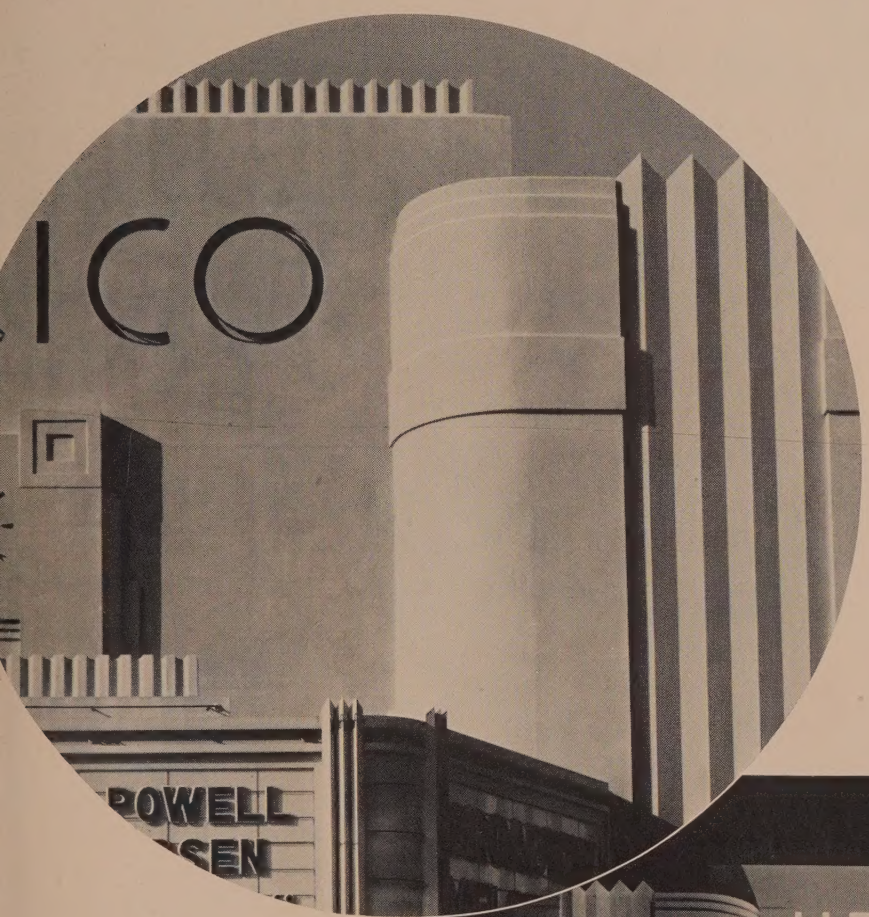
ical construction which included a review of our past experience with architectural concrete. In view of the simplicity, effectiveness, sturdiness and versatility of the material, it was decided to use concrete for the exterior walls surrounding the lobby and vestibule of the building.

Preliminary sketches for the front elevation which embodied considerable detail were discarded and working drawings prepared in which all extravagant detail was minimized in a design based upon harmony of masses, planes and surface texture. The few notes of accent, which may be seen in accompanying photographs, were centered above and around the marquee, itself designed in the simple, direct lines of the material adjacent to it. This unadorned and unbroken surface of concrete cast against plywood and finished with portland cement paint, if duplicated in any other material, would have meant a greater investment with no gain in attractiveness.

Effectiveness of the lettering is accomplished in daylight by means of clean-cut, deeply incised letters, and at night by neon tubes recessed in the letters which produce a brilliant silhouette against the darker wall.

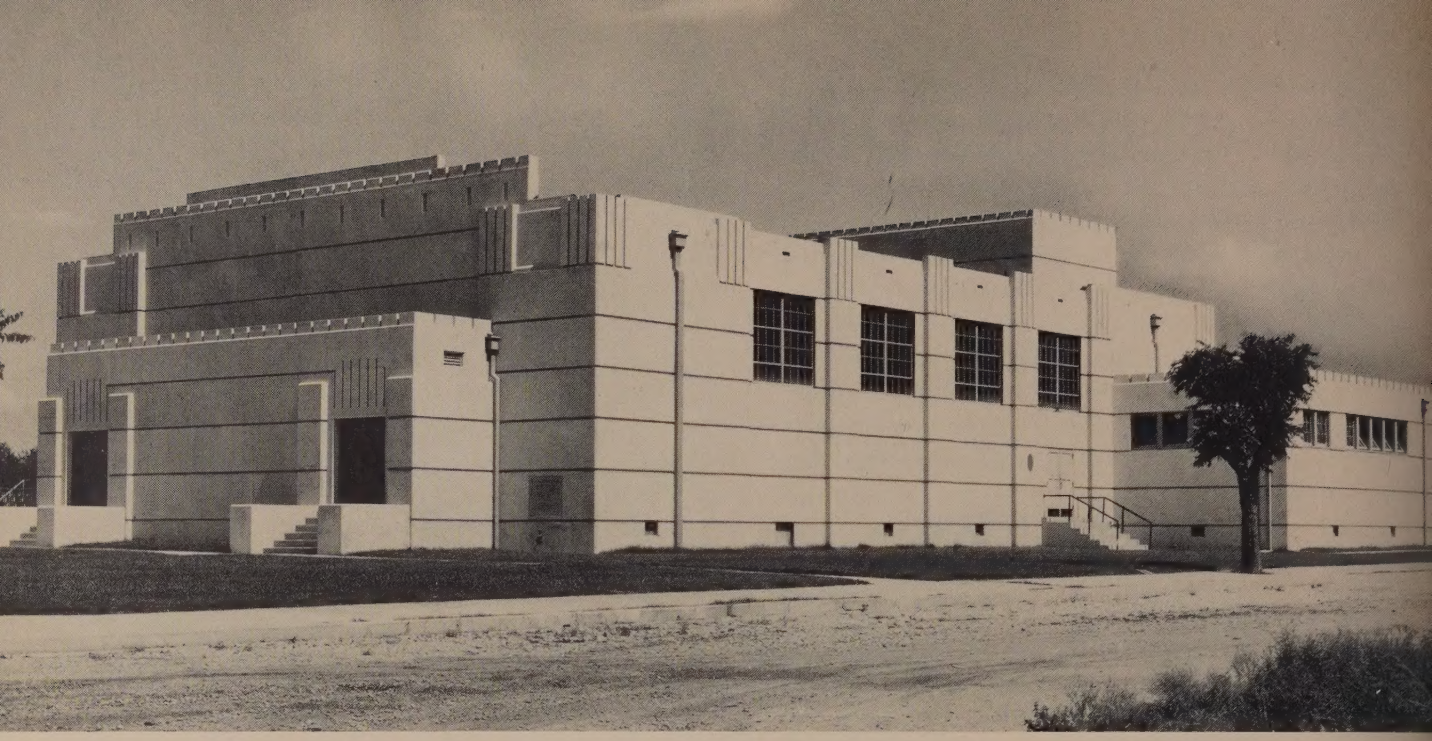
Since this was the third architectural concrete project undertaken by the contractors, Doyle and Russell of Richmond, they were able to use their previous experience to great advantage in precise erection of the forms and controlled placement of the concrete. The excellent manner in which the concrete design was executed is revealed by the enthusiasm of the owner, who has said, "I consider this a most beautiful theater front."

My association with this work has convinced me that any architect who is seeking the answer to problems in the design of front elevations of stores, theaters and other types of commercial buildings will find architectural concrete a most versatile and flexible material and one that expresses sincerity and elegance far beyond its cost.



The few accent notes on the front were molded detail of the simplest order, all sharply formed in concrete.

Lighting is used effectively to bring out the detail at night. Neon tubes were inserted in the recessed lettering to produce a brilliant silhouette against the dark wall.



With an abundance of labor available but a strict limit on cash outlay, Luling (Texas) High School gymnasium was designed for most efficient use of both. T result was a fine building which cost but 13½ cents per cu.ft. David C. Baer was architect and H. F. Kuehne, associate architect. Work was by WPA forc

Gymnasium for Luling, Texas

By David C. Baer, Architect

THE design of Luling High School gymnasium was, to a large extent, influenced by the requirements of a project built in conjunction with WPA. Maximum use of labor from the lower brackets and a minimum of labor from the skilled divisions was essential, and this called for something of a departure from the usual method of handling architectural concrete.

Placing the concrete offered but little difficulty because of the wealth of labor available. Forms, on the other hand, required some skilled labor and considerable material. It was imperative that both be kept to a minimum. For this reason, the form system was perfected first and the architectural design was later made to conform to its limitations and peculiarities. This reversal of procedure solved the problem.

Concrete lifts of approximately 4 ft. high were decided upon as offering the most advantages. Heights of the various parts of the building could be broken down easily into these units. Forms of this height could be handled easily by available labor operating on a high scaffold. Furthermore, a lift of this height offered little danger of honeycomb due to separation or improper rodding, and the danger of forms spreading was reduced. The extreme circumference of the building, together with the length of cross walls, was such that it was impossible to place even a 4-ft. high lift around the building at one time; so this low height again was preferable since it cut the number of vertical construction joints.

The 4-ft. unit, however, did present the problem of making inconspicuous the numerous horizontal joints around the structure, which is approximately 140x110 ft. Since these cold joints could be made less noticeable if they were kept away from the face of the wall, a rustication was worked out to occur at each joint. This dictated the detail of forms and suggested the exterior design of the building.

Strips for forming the rustications on the exterior were 1½ in. thick at the back, 2 in. at the face of the wall. On the interior the strips were cut from ¾-in. stock. The back